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TRANSCRIPT OF RECORD

Supreme Court of the United States

OCTOBER TERM, 1936

No. 89

ERNEST O. THOMPSON, C. V. TERRELL, AND LON A. SMITH COMPOSING THE RAILROAD COMMISSION OF TEXAS, ET AL., APPELLANTS,

vs.

CONSOLIDATED GAS UTILITIES CORPORATION AND TEXOMA NATURAL GAS COMPANY

APPEAL FROM THE DISTRICT COURT OF THE UNITED STATES FOR THE WESTERN DISTRICT OF TEXAS

FILED MAY 28, 1936.

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[fol. 1] [Caption omitted]

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IN UNITED STATES DISTRICT COURT FOR THE WESTERN DISTRICT OF TEXAS, AUSTIN DIVISION

No. 539. In Equity

TEXAS PANHANDLE GAS COMPANY, Complainant,

vs.

ERNEST O. THOMPSON et al., Defendants

COMPLAINANTS' SUBSTITUTED ORIGINAL BILL—Filed January 2, 1936, as of October 1, 1935

To Said Honorable Court:

Now comes Texas Panhandle Gas Company, a corporation, hereinafter called complainant, complaining of Ernest O. Thompson, C. V. Terrell and Lon A. Smith, composing the Railroad Commission of Texas, and William McCraw, Attorney General of Texas, hereinafter called defendants, and represents to the Court as follows:

I

Complainant is a private corporation organized under the laws of the State of Delaware, of which State it is a resident citizen, having its Delaware office in the city of Wilmington and having an office also at Shamrock, in the State of Texas, and operating in the State of Texas under a permit issued by the State of Texas. Defendants Ernest O. Thompson, C. V. Terrell and Lon A. Smith are the duly elected and acting members of the Railroad Commission of Texas, an executive administrative body, and said defendants all reside in the city of Austin, Travis County, Texas, [fol. 3] where each has his office. The defendant William McCraw is the duly elected and acting Attorney General of Texas and resides at Austin, in Travis County, Texas, where he has his office.

II

This Court has jurisdiction of this cause for the following reasons, to-wit:

(a) Complainant is a resident citizen of the State of Delaware and defendants are each resident citizens of the State of Texas, and there is a complete diversity of citizenship between complainant and each of the defendants.

(b) The amount in controversy in this cause exceeds the sum of $3,000.00, exclusive of interest and costs, as will more fully appear in the further allegations of this bill.

(c) This cause arises under and involves certain provisions of the Constitution of the United States, as will more fully appear under the further allegations of this bill.

(d) This cause in part is an appeal from certain rules, regulations and orders issued by the Railroad Commission of Texas under purported authority of certain statutes of the State of Texas, all of which will more fully appear from the further allegations of this bill, which rules, regulations and orders and the statute under which the Railroad Commission of Texas purported to issue same are null and void, complainant contends, because in violation of certain provisions of the Constitution of the United States.

III

Complainant for the past several years has been and at this time is engaged in the business of producing, transporting and selling natural gas from its wells located on leases situated in the County of Wheeler, State of Texas, [fol. 4] and in connection with its business of producing, transporting and selling natural gas complainant has acquired and now owns oil and gas lease- aggregating 7807.83 acres in Wheeler County, Texas, an oil and gas lease aggregating 160 acres in Gray County, Texas, and oil and gas leases aggregating 2240 acres in Collingsworth County, Texas, all of which leases are located in the proven gas producing area or reservoir known as the East Panhandle gas field. Of the said leases situated in Wheeler County, Texas, complainant owns the entire 7/8 working interest, except that under 480 acres thereof it owns only an undivided one-half interest, but it controls the operation of the wells on said 480 acres of land for the production of natural gas therefrom, and is now operating the wells located on said 480 acres of leases. On leases aggregating 1396.53

acres, which include the 480 acres in which complainant owns only an undivided ½ interest as aforesaid, are located twelve wells, all producing natural gas. For the purpose of gathering the natural gas from said twelve wells, transporting same to a point near the common boundary line of the States of Texas and Oklahoma, and selling and delivering said gas to an affiliated company, complainant has constructed, and now owns and maintains, seven miles of pipe lines commonly referred to as gathering lines, which lines vary in diameter from 4 inches to 10 inches, and in addition thereto it has constructed, and now owns and maintains, nineteen miles of 14-inch pipe line, through which the gas produced and delivered from said twelve wells is transported to a point near the common boundary line of the States of Texas and Oklahoma.

In the purchase of its said leases and in the drilling and equipping of the twelve wells above mentioned, and in the purchase of pipe line rights of way and the construction [fol. 5] of its pipe lines as hereinabove set forth, complainant has an actual tangible investment of approximately $1,500,000.00.

IV

For several years complainant has been producing gas from the twelve wells above mentioned and gathering the same through the gathering lines above referred to and delivering such gas into its main pipe line and transporting it through said pipe line a distance of approximately 19 miles to the end of said pipe line, where it has been sold and delivered, and is now being sold and delivered from day to day, to Consolidated Gas Service Company, an affiliated company. For several years said Company has transported and delivered the gas sold and delivered to it by complainant as aforesaid to various distributing companies in the State of Oklahoma and to Larutan Gas Corporation, an affiliated pipe line company organized under the laws of Delaware and operating in the State of Kansas, which company delivers such gas to various distributing companies in the State of Kansas. Some of these distributing companies are affiliated with complainant and said Consolidated Gas Service Company and Larutan Gas Corporation and others are independently owned and acquire such gas by purchase from one or the other of com-

plainant's affiliated pipe line companies. Complainant, Consolidated Gas Service Company and Larutan Gas Corporation, and the affiliated distributing companies to which gas from complainant's wells has been delivered and is now being delivered from day to day as aforesaid, are commonly owned by Consolidated Gas Utilities Company, and together represent one great project organized for the purpose of acquiring natural gas leases and reserves in the State of Texas and transporting such gas to available centers of population in the States of Oklahoma and Kansas, and distributing such gas to domestic and industrial users in such centers of population or selling such gas to local concerns distributing such gas in centers of population. [fol. 6] At this time complainant and its affiliated companies are producing and supplying gas to approximately 21,321 domestic users of gas in the cities of Enid, Blackwell and Tonkawa, in the State of Oklahoma, and the city of Wichita, in the State of Kansas, together with a large number of towns and villages situated in the States of Oklahoma and Kansas, and to industrial users in the city of Hutchinson, Kansas, and in the four cities above named situated in Oklahoma and Kansas, and in many of the smaller towns and villages in which gas is being sold and distributed to domestic users, and to industrial users in other cities and towns situated in the States of Kansas and Oklahoma; that in substantially every instance those purchasing gas from the companies to which complainant is furnishing gas as aforesaid, whether for domestic or industrial purposes, are wholly dependent upon the wells, leases and reserves of complainant situated in the State of Texas for their daily supply of gas, except certain small reserves of gas situated in the State of Oklahoma, which would be entirely inadequate to supply the requirements of such domestic and industrial users of gas for any considerable length of time.

V

The Consolidated Gas Service Company, the Larutan Gas Corporation and affiliated distributing companies operating in the States of Oklahoma and Kansas as aforesaid have made actual tangible investments in pipe lines, pumping stations, distributing equipment and other properties necessary and incident to the transportation and

distribution of natural gas aggregating at least the sum of $10,161,961.64, which together with the investment of complainant as aforesaid aggregates a total investment of $11,661,961.64.

VI

The twelve wells from which complainant is now producing gas from day to day for sale and delivery to said Consolidated Gas Service Company for the purpose of supply- [fol. 7] ing the requirements of the domestic and industrial users of gas to whom such natural gas is being distributed as aforesaid, are capable of producing at this time approximately 352,239,000 cubic feet of gas daily. Underlying the approximately 8810 acres of undeveloped leases owned by complainant in said common reservoir are enormous reserves of gas which will supply complainant's present and contemplated markets for many years. The present requirements of the users of gas who are being supplied from said twelve wells is approximately 18,000,000 cubic feet daily, which is only about 5% of the potential producing capacity of said twelve wells, and said twelve wells are capable of producing more than twenty times the present daily requirements of such domestic and industrial users of gas, and complainant is able at the present time, as it has been for several years past, without committing any waste, to supply all the domestic and industrial requirements of the customers of its affiliated companies in the States of Oklahoma and Kansas as aforesaid from the twelve wells operated by it in Wheeler County, Texas, as aforesaid, and it is in need of no other gas from sources outside of its twelve wells and additional wells that it expects hereafter to drill on its other leases located in the Counties of Wheeler, Collingsworth and Gray, in the State of Texas, and there is no occasion for it to purchase gas from other persons in order to meet its present market requirements or its contemplated market requirements.

VII

Complainant represents that by virtue of the characteristics of natural gas, it is impossible to store it or to transport it in commercial quantities other than by pipe lines; that the construction and maintaining of natural gas pipe lines involves enormous investments, and that as a practi-

cal business matter, a natural gas pipe line can be financed [fol. 8] and constructed only in connection with or following the acquiring of adequate gas reserves to afford a dependable supply of gas to be transported through such pipe line, and also the arranging of adequate markets for the distribution of such gas at the other end of the pipe line. In connection with the whole project organized by the owners of complainant and the other affiliated companies above referred to, very substantial sums of money, aggregating more than eleven and a half million dollars as aforesaid, have been expended in the acquiring of gas leases, the drilling of wells thereon, and in the acquiring of pipe line rights of way and the construction of natural gas pipe lines from said wells to the main pipe line, and pipe line rights of way and the construction of the main pipe line from a point in Texas across the State of Oklahoma into the State of Kansas as aforesaid. The reserves owned and held by complainant, while adequate to meet all the market requirements now in contemplation, are no more than the reasonable reserves necessary for the protection of the total investment of complainant and its affiliated companies in the transportation and distribution facilities which have been acquired, constructed and installed by complainant and its affiliated companies.

VIII

Complainant represents that explorations and developments for the production of oil and gas have disclosed vast deposits of natural gas suitable for fuel underlying large areas in the Panhandle of Texas, aggregating more than one million acres of land; that developments down to this date have disclosed that the total volume of gas underlying such areas will be sufficient to serve a population of ten million or more people for a period of twenty years or more. The portion of Texas in which this deposit of natural gas lies is sparsely settled, the entire population thereof being not more than 150,000 people. The only available markets for natural gas in the vicinity of such areas had been supplied prior to the year 1928, and dur- [fol. 9] ing the time when the project of which complainant's properties form a part as aforesaid was being organized it was obvious to complainant and to those associated with it, and to others interested in the development

of the natural gas resources of the Texas Panhandle, that no local market could be found for this natural gas. The only cities or centers of population in Texas of a size affording a market for considerable volumes of gas were and are hundreds of miles from this area and have long since been served from gas reserves in other portions of the State. These facts made it necessary that markets be found outside the State of Texas. The nearest available potential markets outside of Texas, from the time complainant and its affiliated companies were organized, were the cities and towns above referred to in the States of Oklahoma and Kansas, ranging in distance from 30 to 300 miles from complainant's leases above referred to.

IX

Natural gas cannot be stored like other mineral products, but must be taken directly from the producing wells and delivered through pipe lines to the consumer for immediate use. In order to arrange for the necessary capital required to purchase and develop the gas reserves and carry the natural gas to these remote markets, it was found essential (a) to go into these markets and contract in advance for the sale of a sufficient volume of gas to justify the construction of pipe lines and the acquisition of gas acreage or gas reserves; (b) to assure the persons with whom these contracts were made that a sufficient volume of gas had been acquired by those seeking markets therefor so that there would be at all times a continuous and dependable supply of natural gas available for use as needed; and (c) to finance and construct pipe lines reaching from the wells located on such gas reserves to these remote markets. Enormous sums of money were expended by complainant and its [fol. 10] affiliated companies in the construction of their pipe lines and distribution systems and in employing the executives, engineers, attorneys and others whose services were essential in negotiating and acquiring markets for the sale and distribution of gas; that the pipe lines and markets thus acquired by complainant and its affiliated companies belong to and are the property of complainant and those affiliated with complainant as aforesaid, and complainant has property rights in its gas leases, gas wells, gas pipe lines, and markets entitling it to develop its own leases, produce the natural gas therefrom, transport the

same to its connecting pipe line, and sell and deliver the same to the owner of such connecting pipe line for distribution by the latter and by others affiliated with it to their domestic and industrial consumers.

X

Complainant says that it disposes of substantially no gas within the State of Texas, and that substantially all of its gas moves in interstate commerce from the bottom of its wells through the casing and connections into complainant's pipe line and thence into the pipe line of Consolidated Gas Service Company and across the common boundary line of the State of Texas and the State of Oklahoma and on through connecting pipe lines to points in the States of Oklahoma and Kansas; that complainant and the companies affiliated with it are engaged solely in an interstate commerce transaction in the movement of its gas from the bottom of the well to the time of its ultimate delivery to consumers.

XI

Complainant further represents that it sells and delivers natural gas to Consolidated Gas Service Company by virtue of a written contract between complainant and said company, and complainant is obligated to sell and deliver to said company the full quantity of gas necessary to meet the latter's market requirements and the latter is required [fol. 11] to pay complainant substantial sums of money upon the sale and delivery to it of such gas by complainant. Said contract constitutes valuable property belonging to complainant, and complainant has a right under the terms of said contract to enjoy the fruits and benefits thereof. Said contract was entered into long prior to the enactment of the statute and the promulgation of the orders, rules and regulations of the Railroad Commission of which complainant complains in this bill.

XII

Complainant further avers that scattered throughout the area embraced in the so-called East Panhandle gas field in the northern portion of Texas, which is the eastern portion of the great Panhandle reservoir, are numerous tracts of land in addition to those covered by complainant's leases,

on many of which tracts of land wells have been drilled and equipped for the production of natural gas therefrom; that the owners of a considerable number of said wells now equipped for the production of natural gas have failed to provide markets for the sale of their gas; that in order to prevent the termination of the leases through failure to develop during the primary term, other gas wells will doubtless be drilled and completed as producers of natural gas on lands scattered throughout the same area, and the owners of these wells may be without available markets for the time being for the natural gas which could be produced from such wells. The owners of the other wells who have no market outlet for the gas produced therefrom had the same opportunity and the same right to make the expenditures and invest the money, time and talent necessary to the building of pipe line outlets and acquiring of markets for the sale and delivery of their gas; but such owners have wholly failed to use the diligence used by complainant and many others for the marketing of their gas, but have con- [fol. 12] tented themselves with demanding that complainant and others who have provided themselves with market outlets and with pipe line transportation facilities divide their markets and transportation facilities with those who have no such markets or pipe line facilities through the purchase from such owners of natural gas, which complainant and those similarly situated do not need or require in order to meet their market requirements. If complainant and those similarly situated yield to this demand and purchase gas from others who have no pipe line facilities for handling their gas or market outlets for disposing of same, they deny themselves of their right and opportunity to market their own gas to exactly the extent that they purchase gas from others, and in effect divide their private markets and marketing facilities with others. Complainant is under no obligation to divide its markets and its pipe line facilities with those who have no ownership or investment therein, and any effort to deprive complainant of its right to use its pipe line facilities and its markets for the transportation and sale of its own gas by requiring complainant to purchase gas from others and transport the same through its pipe line facilities and dispose of it in complainant's markets violates fundamental and valuable property rights of complainant entitling it to produce, transport and sell

its own gas in the markets made available by complainant's diligence.

XIII

Complainant avers that the 44th Legislature of Texas, at the Regular Session thereof which convened about the 8th day of January, 1935, enacted a statute purporting to regulate the production, transportation and sale of natural gas and to define and prevent the waste of natural gas and to restrict the production of gas to a schedule of production [fol. 13] fixed by the Railroad Commission. The statute referred to is known as House Bill 266 and was duly enacted by both houses of the Texas Legislature and approved by the Governor. Said statute covers many features and phases of the production, conservation and transportation of natural gas not material to this bill. The material provisions of such statute are as follows:

"Sec. 10. It shall be the duty of the Commission to prorate and regulate the daily gas well production from each common reservoir in the manner and method herein set forth. The Commission shall prorate and regulate such production for the protection of public and private interests:

(a) In the prevention of waste as "waste" is defined herein;

(b) In the adjustment of correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas as permitted in this Article.

"Sec. 11. The Commission shall exercise the authority to accomplish the purpose designated under item (a) of Section 10 when the presence or imminence of waste is supported by a finding based upon the evidence introduced at a hearing to be held as herein provided.

The Commission shall exercise the authority to accomplish the purpose designated under item (b) of Section 10 when evidence introduced at a hearing to be held as herein provided will support a finding made by the Commission that the aggregate lawful volume of the open flow or daily potential capacity to produce of all gas wells located in a common reservoir, is in excess of the daily reasonable market demand for gas from gas wells that may be pro-

duced from such common reservoir, to be utilized as permitted in this Article.

"Sec. 12. On or before the twentieth (20th) day of each calendar month the Commission shall hold a hearing after notice has been given, as provided by law, for the purpose of determining the aggregate daily capacity to produce of all gas wells in a common reservoir, and as nearly as possible, the daily volume of gas from each common reservoir that will be produced from gas wells during the following month to be utilized as permitted in this Article. Upon such determination, the Commission, based upon evidence introduced at such hearing, shall allocate to each gas well producing gas from such common reservoir a percentage of the daily productive capacity of each well which may be produced daily during the following month from each gas well producing gas from such common reservoir. Such percentage of the daily producing capacity of each well shall be regarded as its daily allowable production of such daily volume required for utilization from such common reservoir. The daily allowable production of each [fol. 14] gas well shall be computed and allocated as provided in Sections 13 and 14.

"Sec. 13. In determining the daily allowable production for each gas well the Commission shall take into account the size of the tract segregated with respect to surface position and common ownership upon which such gas well or wells are located; the relation between the daily producing capacity of each gas well and the segregate daily capacity of all gas wells producing the same kind of gas in the same common reservoir or zone; and all other factors which are pertinent; provided that the Commission shall not take into account the size of the tract upon which any gas well or wells are located in excess of the efficient drainage area of such well or wells, producing at twenty-five percent (25%) of the daily productive capacity, which drainage area shall be determined by the Commission. In ascertaining the drainage area of a well, the Commission shall take into account such factors as are reflected in the productive capacity of a gas well, including formation pressure, the permeability and porosity of the producing formation, and the well bore's structural position, together with all other

factors taken into account by a reasonably prudent operator in determining the drainage area for a gas well.

"Sec. 14. It shall be the duty of the Commission, after notice and hearing, to ascertain and determine the reasonable market demand for gas from gas wells to be used for light and fuel purposes and for all other lawful purposes to which sweet gas may be put under the terms of this Article and by proper order to restrict the production of gas from all gas wells in said field producing such gas to an amount equal to market demand or to an amount which may be produced without waste as otherwise defined; provided, however, the production of such gas shall in any event be restricted to the amount of the reasonable market demand therefor. In such order the Commission shall allocate, distribute or apportion the total allowable production from such field among the various gas wells affected by the order on a reasonable basis, and as provided in Section 13. It shall likewise be the duty of the Commission to prorate the daily gas well production of sour gas produced from each common reservoir of sour gas in this State. The hearing for such purpose shall be held at the same time as the hearing pertaining to the proration of sweet gas well production. The proration of sour gas well production shall be accomplished according to the manner and method herein provided for the proration of sweet gas well production.

"Sec. 15. Nothing contained in this Article shall require that the production from any gas well with a daily natural open flow of two hundred thousand (200,000) cubic feet of natural gas or more to be restricted to a quantity less than fifty thousand (50,000) cubic feet of natural gas daily; and nothing herein shall require that the production from any gas well with a daily natural open flow of less than [fol. 15] two hundred thousand (200,000) cubic feet of gas be reduced to a quantity less than twenty-five percent (25%) of its natural open flow.

In all common reservoirs producing both sweet and sour gas, no gas well shall be permitted to produce in excess of twenty-five percent (25%) of its daily productive capacity; provided the Commission, upon a finding that reservoir conditions require that such percentage be increased to prevent waste, and that such increase will not create a

drainage condition as between sweet and sour gas lands, may authorize an increase in such allowable production. Where the allowable production theretofore allocated to any well is more than fifteen percent (15%) of its daily producing capacity, and the Commission finds that the production of its daily allowable from such well will cause waste due to the intermingling of sweet and sour gas, the Commission may order the production from such well restricted to fifteen percent (15%) of its daily producing capacity, but this sentence shall not be constructed to militate against the right of the Commission to fix the allowable production of any well below fifteen percent (15%) of its daily producing capacity in carrying out the requirements of Sections 13 and 14 of this Act.

"Sec. 16. It shall be unlawful for any person to produce gas from a gas well as herein defined in excess of the daily allowable production in such schedule of allowable production. The rate of production from any gas well shall be deemed to be the average daily rate of production for the month.

"Sec. 17. Where gas is produced from one stratum and oil and gas is produced from another stratum in the same well bore, the Commission shall take into account the amount of gas produced from the oil stratum in determining the amount of gas that may be produced from the stratum producing gas only and may subtract the amount of the casinghead gas produced from the dry gas that would be allocated to said well if it produced dry gas and may restrict the dry gas production accordingly.

"Sec. 18. When unforeseen contingencies increase the demand for gas required by any distributor, transporter or purchaser to an amount in excess of the total allowable production of the wells to which he is connected, such distributor, transporter or purchaser is authorized to increase his take ratably from all such wells in order to supply his demand for gas, provided, however, that notice of such increase and the amount thereof shall be given to the Commission within five (5) days; and provided further that the Commission, at its next hearing, shall adjust the inequality of withdrawals caused by such increase in fixing the allowable production of the various wells in the common reservoir or zone.

"Sec. 19. If the Commission finds upon consideration of the evidence introduced at a hearing that either or both of the purposes designated under Section 10 of this Article [fol. 16] may be more adequately accomplished by zoning a common reservoir, the Commission shall zone such common reservoir. If the Commission zones such common reservoir, each zone shall be regarded as a separate common reservoir in making allocations of daily allowable production as provided in this Article. The Commission shall allocate to each zone its just proportion of the market demand for gas from the common reservoir, and shall establish appropriate rules and regulations applicable to each zone and shall have the right to adjust its orders to the practicable conditions which exist and to enter any reasonable order which is necessary to effectuate the purpose of this law. The Commission is expressly authorized to segregate a sour gas area from a sweet gas area and shall not be required to restrict the allowable production of the sour gas zone to the same percentages that may be produced from the sweet gas zone.

"Sec. 20. In the event the Commission finds that the owner of any gas well has failed or refused to utilize or sell the allowable production from his well when such owner has been offered a connection or market for such gas at a reasonable price, such well shall be excluded from consideration in allocating the daily allowable production from the reservoir or zone in which same is located until the owner thereof signifies to the Commission his desire to utilize or sell such gas. In all other cases all gas wells shall be taken into account in allocating the allowable production among wells producing the same type of gas.

"Sec. 23. Any person violating any of the provisions of this Article shall be liable to a penalty not to exceed One Thousand Dollars ($1,000) for each offense, and each day's violation shall be a separate offense. Such penalty may be recovered by the State of Texas with the cost of suit in a civil action instituted in Travis County or in the County where the violation occurred by the Attorney General or by the County or District Attorney when joined by the Attorney General of Texas; and any and all violations or threatened violations of this Article may be enjoined by any Court of competent jurisdiction in which the

suit for penalty may be brought, and in such cases the Court may issue such writs of injunction, mandatory or prohibitory, as the facts justify."

XIV

Complainant represents that the real purpose of those portions of the legislative act referred to and quoted above, as disclosed by their necessary effect and operation, was to compel complainant and other pipe line companies similarly situated, which like it had developed markets in interstate commerce or otherwise, to share these markets with individuals and corporations producing gas generally and to provide a market for the owners of wells producing [fol. 17] natural gas who at this time have no available market, by forcing and coercing complainant and those similarly situated to buy gas from such producers, notwithstanding the fact that complainant and others similarly situated have no need for such additional natural gas in order to fulfil their market contracts and requirements, and cannot purchase and use this gas from miscellaneous producers without great inconvenience and serious losses as hereinafter set out. Complainant shows that it and other pipe line companies similarly situated are the only persons, firms or corporations now in position to take and transport to market, for purposes recognized as legal and legitimate under the laws of the State of Texas, natural gas of the character produced from complainant's wells, and in purporting to require, through the enactment and enforcement of such statute, that no more gas can be produced from such reservoir than that necessary to supply the existing market demand, and to require that such gas be taken ratably from all wells producing or capable of producing gas from such reservoir, the Legislature intended, as shown by the necessary effect and operation of such statute, to prevent complainant and those similarly situated from supplying their own market requirements from gas produced from their own wells and thus to coerce and force complainant and others similarly situated to make up substantial portions of their market requirements through the purchase of gas from those not having at this time an available market for their natural gas, and thus to divide their private markets and pipe line facilities with the later. Complainant further represents that under the

facts and circumstances hereinabove set forth, complainant's business is not affected with a public interest in the sense that would entitle the State of Texas to coerce and force it to place its pipe lines and gathering system and its pri- [fol. 18] vate markets at the service and disposal of other persons who have contributed nothing to the cost of construction of such pipe lines and gathering system or to the procuring of such private markets. The State of Texas, through its Legislature, is wholly without authority, directly or indirectly, to compel complainant to purchase from other producers gas that it does not want, does not need and can not use without interfering with its own markets which it has procured and provided as an outlet for its own gas, thereby requiring it to share its private markets and market contracts and its transportation facilities with the public and interfering with the orderly development of its leases, as herein more particularly set forth.

XV

Notwithstanding such want of power and authority on the part of the State of Texas through its Legislature, the Railroad Commission of Texas has manifested and announced a purpose to enforce the aforesaid statute, and to that end has promulgated and announced certain rules, regulations and orders through which it is seeking indirectly, if not directly, to require complainant and others similarly situated to comply with said act and to purchase part of the gas required for the fulfillment of its market obligations from other persons, which persons have no interest in the pipe lines and other transportation facilities or the private market contracts constructed and provided by complainant as aforesaid. These orders, rules and regulations are denominated in the caption "Special Order Fixing Allowable Production of Sweet Natural Gas in the Panhandle District of Texas" and Exhibit "A" thereto. A copy of said so-called special order, marked Exhibit "1" and that portion of said Exhibit "A" to said order that directly affects the wells belonging to and operated by complainant as aforesaid, marked Exhibit "2", are attached hereto and [fol. 19] by reference made a part of this bill, and they will be more particularly referred to in subsequent paragraphs hereof. In said Exhibit "2" the term "Texas Panhandle"

refers to this complainant, and the captions above the successive columns of figures are self-explanatory.

Subsequently, about August 28th, 1935, said defendants promulgated another order, substantially in terms the same as a subsequent order issued about September 25th, 1935. Since the latter order takes the place of the order dated August 28th, 1935, we deem it unnecessary to plead in detail the terms of the order last mentioned, of which complaint is made. A copy of the so-called special order dated September 25th, 1935, marked Exhibit "3", is attached hereto and by reference is made a part of this bill. In connection with said order said defendants issued another schedule of allowables, captioned "Gas Proration Schedules for October, 1935," and a copy of that portion of said schedule directly affecting the wells belonging to complainant as aforesaid, marked Exhibit "4", is attached hereto and by reference made a part of this bill. In said Exhibit "4" the term "Texas Panhandle" refers to complainant, and the captions above the successive columns of figures are self-explanatory.

In Subdivision E of said order last mentioned said defendants made the following statement or finding:

"Physical waste, both underground and overground, is now taking place in each of said fields; and the restriction of production when ratably distributed among the various wells in said fields, capable of producing sweet gas, will prevent physical waste as defined by said House Bill 266; will result in a greater ultimate recovery of gas from each of said fields; will result in a more efficient drainage from said reservoirs by the producing wells; and such restriction is necessary to protect and adjust the correlative rights and opportunities of the owners of the various wells in said fields capable of producing sweet gas."

In making such statements and findings just quoted and referred to, said defendants acted wholly without any testi- [fol. 20] mony of probative force, and said findings, on the contrary, are in direct conflict with the overwhelming testimony offered before the Commission at the respective hearings held preliminary to the issuance of said orders and findings. No substantial testimony was introduced at any of said hearings to the effect that the restriction of

production, when ratably distributed among the various wells in the fields capable of producing gas, will prevent physical waste as defined in said Act, or will result in a greater ultimate recovery of gas from each of said fields, or will result in a more efficient drainage from said reservoir by the producing wells. Said statements and purported findings do not in fact represent the views and convictions of the defendants composing the Commission, who in truth know that the facts are to the contrary; but were made with the deliberate purpose of trying to bolster up said orders under attack herein. Even measured by the drastic rule heretofore prescribed by this Court, which complainant asserts is too drastic under the well established rules of procedure governing cases of the character of the case at bar, particularly in the State of Texas, complainant shows that no reasonable man, sitting in the position of the defendants composing the Railroad Commission of Texas, could have reached the conclusion from a fair consideration of the testimony before the Commission that said orders promulgated by the Commission would operate to prevent physical waste, underground or overground, of natural gas in the field from which complainant is producing gas. As a matter of fact, complainant has never committed or caused any character of physical waste in the operation of its wells nor have those producers of gas who have supplied other pipe lines transporting gas from said Panhandle field to distant markets been guilty of committing or causing any physical waste. Said purported statements and findings are therefore null and void and are entitled to no credence or weight of any kind or character by [fol. 21] the Court in considering the issues raised by complainant's bill.

The purported finding by the Commission that the restriction in the production of gas sought to be enforced under the terms of said orders is necessary to protect and adjust the correlative rights and opportunities of the owners of various wells in said fields capable of producing sweet gas is likewise wholly without substantial evidence to support it. No evidence of probative force was introduced at any of the hearings before the Commission in its purported consideration of this subject that would support such purported finding. Complainant has the legal right to acquire and develop its own gas leases, to pro-

duce its gas and transport the same through its pipe lines, provided by it at its own cost and expense as herein alleged, and to market such gas in the markets which through the exercise of its foresight, skill and negotiations, and through the expenditure of its money, it has been able to develop, so long as it can produce, transport and market such gas without waste. It has produced its gas in the exercise of the rights just stated without committing or causing physical waste. Every other owner of a gas well producing gas from the same reservoir has the same right to acquire leases, drill wells thereon, produce gas, build pipe lines, and transport such gas through such pipe lines to such markets as he shall develop in the same manner and by the same means as have complainant's markets been developed; and the exercise by complainant of its rights just stated in no sense violates any correlative right of any other owner of a gas well capable of producing gas from such field. The necessary operation and effect of said orders is not to protect the correlative rights of any owner of a gas well producing from such reservoir, but to divest and deprive complainant of its right to produce its own gas, [fol. 22] utilize its own pipe lines for the transportation of such gas, and to market such gas in its own private markets, and to confer upon others, who have made no contribution of any kind or character to the building of complainant's pipe lines or the development of its markets, the privilege, to which they have no right, of sharing complainant's pipe line facilities and dividing complainant's private markets on the same basis as complainant shall be permitted to utilize the same. The necessary operation and effect of said orders and of the statute here under attack is to limit and curtail the production of gas from complainant's well situated in said field to a small fraction of their potential producing capacity, and to require complainant and others similarly situated to divide their private markets and transportation facilities with others who have no interest in its pipe lines or in its transportation facilities or market contracts developed and owned by it as aforesaid.

In this connection complainant represents that there is no general market for natural gas such as obtains for other commodities, which markets exist independently of any effort by the producers of such commodities. There is practically no market for gas in the Panhandle gas field,

where the population is sparse as aforesaid, and the only markets for the natural gas which can be produced from such field are remotely situated with reference thereto and exist only through and by virtue of private contracts with those who distribute gas for domestic purposes and with industrial consumers, all of which contracts have been negotiated by pipe line companies and their affiliated companies, including complainant and its affiliated company above named, and in the effort through such statute and such orders to limit the production of natural gas from the East Panhandle field to the existing market demand, the [fol. 23] Legislature and the defendants composing the Railroad Commission necessarily purposed and intended to force complainant and others who have acquired such private markets to divide such markets and their transportation facilities provided for transporting their own gas to their respective private markets with others who have no interest therein.

XVI

In Sections 10 and 11 of said Act, the reference to correlative rights and opportunities of the owners of gas in a common reservoir was necessarily intended by the Legislature to refer to the correlative rights then existing and recognized by the courts of last resort in the State of Texas governing the property rights of the owner of a gas lease and a well producing natural gas, under which the land owner or lease owner may by sinking a well on his land or lease acquire title to all the gas which may be produced therefrom without physical waste, regardless of the fact that it may be drawn from under the lands of adjoining land owners, limited only by the physical possibility of the adjoining land owner's diminishing the gas under the former's land by the exercise of the same right of capture. Said Act, if valid, is not subject to any other construction than one limiting its operation, in so far as it purports to authorize the Commission to prorate and regulate production of gas in the adjustment of correlative rights and opportunities of the owners of gas in a common reservoir, to those conditions and situations where it is necessary to prorate and regulate production of gas for the protection of such declared correlative rights. By such Act the Legislature did not attempt to change the

property right vested in the owner of a gas well to produce and appropriate the gas from such well without regard to its origin, and manifestly intended that such property rights in gas wells should continue in the owners as uniformly declared by the courts of last resort in Texas prior [fol. 24] to the enactment of said statute. It was not intended by the Legislature to delegate or to vest in the Commission any power or authority to change or modify the property rights of the owners of gas wells.

If complainant be mistaken in its construction of the statute, and if the Legislature by said Act intended to delegate to and vest in the Commission the power and authority to change the property rights of persons owning gas wells, then said Act, insofar as it purports to delegate to and vest in the Commission such power and authority, is null and void and ineffective to confer any such power or authority upon said Commission for the reasons hereinafter more particularly set forth.

XVII

If said Act be construed as purporting to authorize the Commission to promulgate and issue such an order as that issued by it on August 28th, 1935, as aforesaid, complainant shows that the real purpose of the Legislature in enacting such statute, as disclosed by its necessary effect and operation, was to compel complainant and other pipe line companies similarly situated, which like it have developed markets in interstate commerce and constructed pipe lines connecting their wells with such markets, to share these markets and pipe line facilities with individuals and corporations producing gas generally, and to provide transportation facilities and markets for the owners of wells producing natural gas who at this time have no available market by forcing and coercing complainant and those similarly situated to buy gas from such producers, notwithstanding the fact that complainant and others similarly situated have no need for such additional gas in order to fulfill their market contracts, and cannot purchase and use this gas from other producers without great inconvenience and serious losses as hereinafter set forth. In this con- [fol. 25] nection complainant shows that it and other pipe line companies similarly situated are the only persons, firms or corporations now in position to take and transport to

market, for purposes recognized as legal and legitimate under the law, gas from wells drilled into the gas bearing sands of said reservoir, and in purporting to require through the enactment and enforcement of such statute that no more natural gas be produced from said reservoir than the existing market demand, and to require that such gas be taken ratably from all wells producing or capable of producing gas from such reservoir, the Legislature intended, as shown by the necessary operation and effect of such statute, to prevent complainant and those similarly situated from supplying their own market requirements from gas produced from their own wells and to force them to make up substantial portions of their market requirements through the purchase of gas from those not having at this time an available market for their natural gas or available facilities for transporting same to market. Under the facts and circumstances herein stated, complainant is not affected with a public interest in the sense that would entitle the State to coerce and force it to place its pipe line and gathering system and its markets at the service and disposal of other persons, who have contributed nothing to the cost and construction of such pipe line and gathering system or to the procuring of such markets. The Legislature is wholly without authority, directly or indirectly, to compel complainant to purchase from other producers gas that it does not want, does not need, and cannot use without interfering with its own markets, which it has procured and provided as an outlet for its own gas, thereby requiring it to share its markets and market contracts and its transportation facilities with the public, and interfering with the orderly development of its leases, as hereinabove more particularly set out. Notwithstanding such want of power [fol. 26] and authority on the part of the State or the Legislature, the Commission has announced a purpose to enforce the aforesaid statute as construed by it and to enforce the order and schedules promulgated by it as aforesaid, and is thereby attempting to require complainant and others similarly situated to divide its pipe line facilities and markets with others who have made no contribution to the construction and development thereof.

XVIII

As applied to complainant, said orders, rules and regulations promulgated by the defendants composing the Rail-

road Commission of Texas operate to prohibit complainant's producing in excess of 4,147,000 cubic feet of natural gas daily, notwithstanding it has a market for approximately 18,000,000 cubic feet of natural gas daily as aforesaid. The volume of gas which complainant would be permitted to produce under the operation of said orders, rules and regulations is less than 1% of the potential producing capacity of its said twelve wells, and if enforced, the operation of said orders would allow complainant to produce 13,850,000 cubic feet of gas less than its present market outlet. Complainant would have no means of supplying its present market outlet in the State of Texas except to go out and purchase gas from owners of other gas wells. The supplying of said 13,580,000 cubic feet of gas necessary in addition to that which could be produced from complainant's wells under the terms of said orders, rules and regulations, in order to meet complainant's market requirements, would require the allowable production from the nearest 65 wells to complainant's pipe line in the Texas Panhandle field. Of such 65 wells, 50 are now connected to other pipe lines; six are connected to natural gasoline plants; and only nine are unconnected. Those wells con- [fol. 27] nected to other pipe lines or to natural gasoline plants are subject to contracts existing between the owners of such wells respectively and the pipe lines or natural gasoline plants to which same are connected, and complainant has no assurance that it could obtain any natural gas from any of such 56 wells so connected with other pipe lines or natural gasoline plants. The nine wells not connected would supply only a small fraction of the additional market requirements of complainant. There are in Wheeler County only three other wells capable of producing natural gas which are not connected to other pipe lines or natural gasoline plants, and in the so-called East Panhandle zone or field, in which complainant's twelve wells are located, there are only 23 wells, including the nine wells in Wheeler County above referred to, which are not connected with other pipe lines or with natural gasoline plants; and if all of said 23 wells were connected to complainant's pipe lines, the production which the owners of such wells could produce under the operation of the orders, rules and regulations of the Railroad Commission above mentioned would be entirely inadequate to supply the additional gas

needed to meet complainant's market outlet. All of said unconnected wells, except the nine wells included in the 65 wells nearest to complainant's pipe line, are so remotely situated that it is entirely impracticable to reach same with pipe line connections without prohibitive expenditures of money. In fact, even if all 65 of the wells nearest complainant's pipe line were available and their owners would sell gas to complainant if connected to complainant's pipe line, the cost to complainant of building pipe lines connecting its pipe line system with such wells and installing the necessary meters and other equipment incident to the production of gas and delivering same to complain-[fol. 28] ant's pipe line would be unreasonable, confiscatory and prohibitive. A very conservative estimate of the cost of making such pipe line connections with such 65 wells as would be required in order to supply complainant's market outlet at the rate of production allowed under the orders, rules and regulations of the Railroad Commission above referred to would amount to $285,000.00, and the connection with such additional 65 wells would increase the operating cost to complainant at least $660.00 each month. Complainant has no means of forcing the owners of such wells to deliver gas to it, much less to require such owners to build the pipe lines necessary to connect such wells with complainant's pipe line, and even if complainant were in position to make the expenditure of said $285,000.00, complainant has no assurance that the owners of such wells would permit connections to be made with them for the purpose of producing and delivering gas therefrom to complainant's pipe lines. If complainant be placed in a position where it can produce from its own wells less than one-fourth of the gas necessary to meet its market requirements, it will be subjected to the hazard of sustaining enormous financial losses and will be forced to breach its contracts with those who are purchasing gas from it and from its affiliated companies, with the inevitable result that it will in all probability lose a large portion of its market outlet.

XIX

Applied to complainant and complainant's properties, the statute enacted by the 44th Legislature as aforesaid and the orders promulgated by the defendants composing the Commission thereunder are each and all unconstitutional

and void in that they necessarily operate to take complainant's property and property rights without due process of law, and to deny complainant the equal proteetion of the [fol. 29] laws, in violation of the Fourteenth Amendment to the Constitution of the United States and of Sections 16, 17 and 19, of Article I, of the Constitution of Texas, and to deprive complainant of its liberty and its property in violation of the impairment of contracts clause of Section 10, Article I, of the Constitution of the United States, and of the sections above named of the Constitution of the State of Texas, and in that they operate to take, damage and destroy complainant's property for a purported public use and apply same to a purported public use without adequate compensation being made and without complainant's consent, in violation of Section 17, Article I, of the Constitution of Texas, in this:

(a) The necessary operation of said Act and said orders as applied to complainant is to prevent complainant from taking its gas from the rocks and sands underlying its leases, and to deprive complainant of its property rights in such gas and in the use and disposition of same.

(b) Under the necessary operation of said Act and said orders, complainant will of necessity be deprived of the right to supply with its own gas that part of its market outlets which it would supply with gas purchased from others under the operation of said Act and such orders, with a total net loss to it of the same volume of natural gas that it shall be forced to purchase under the necessary operation and effect of such Act and such orders through drainage to the wells of others situated in low pressure areas in proximity to complainant's leases.

(c) The operation and effect of such Act and such orders will prevent no physical waste and will have no relation to the prevention of waste; but such Act was designed by the Legislature and such orders were designed and promulgated by the Commission for the purpose of coercing complainant to buy the gas of others not interested in its leases, [fol. 30] its transportation facilities, or its market outlets, thus making complainant's right to produce, transport and market its own gas dependent upon the ability of others owning gas wells to do likewise, and thereby taking complainant's property and property rights and depriving com-

plainant of its property and property rights in the gas from its own wells.

(d) As above alleged, complainant and its affiliated company have expended large sums of money through the employment of negotiating agents, engineers and attorneys and through the expenditure of time by their own officers and regular employees in negotiating and developing their markets; and complainant is compelled, by reason of competition with other fuel and other gas companies, to put up a ceaseless and strenuous fight, at great cost to it, to retain its markets against the competition of those engaged in the production, transportation and sale of other fuels and of natural gas. While the markets thus procured are not now adequate and sufficient to enable complainant to sell its proportion of the current daily withdrawal of natural gas from said reservoir, it has by the expenditure of money and time and by its persistence and skill in negotiating with those interested in the purchase of natural gas, procured markets for substantial volumes of gas as aforesaid, and its right to fulfill its market contracts with its own gas produced from its own reserves and to gather and transport its gas through its pipe line system is a valuable right. The necessary operation and effect of said orders is to deprive complainant of the full benefit of said markets and market contracts, and to confiscate a substantial portion of its interest in said markets and market contracts, and to require complainant to set aside and deliver to others substantial interests in such markets and market contracts, thus depriving complainant of its property and property rights in said mar-
[fol. 31] kets and market contracts.

(e) The necessary effect and operation of said Act and such orders is to deprive complainant and its affiliated company of its right to the full use of complainant's gathering system, pipe line equipment, and said affiliated company's pipe line and equipment acquired for use in connection with complainant's operations and the operations of said affiliated company, and to confiscate and appropriate a valuable and substantial interest in this right by requiring complainant and its said affiliated company to place at the disposal of others, who have no interest in said pipe lines or equipment or any part of same, their transportation facilities afforded by said pipe line, gathering system and

equipment for the transportation of natural gas belonging to others to the markets developed by complainant and its said affiliated company.

(f) The State has no such interest in protecting the claimed correlative rights of private owners in a common source of supply of natural gas as authorizes or empowers the Legislature or the Commission thus to take complainant's property without due process of law, or to take, damage and destroy complainant's property for a purported public use (complainant says that the interests served by said Act and such orders are not public, but entirely private) and apply same to such purported public use without adequate compensation being made and without complainant's consent, which consent complainant has not given. The right and power of the State or a tribunal of the State to protect the correlative rights of private owners in a common source of supply of natural gas, if any such right as that claimed by the Commission exists, must inevitably cease at that point where such correlative rights cannot be protected except by taking the private property of complainant without due process of law, and by taking, damaging and destroying complainant's gas and its other valuable [fol. 32] property and property rights as hereinabove pointed out for a purported public use and applying same to such purported public use, however desirable from the standpoint of the State and the public.

(g) Without regard to the conscious purposes and motives of the members of the Legislature which enacted the legislation here under attack and the defendants composing the Railroad Commission in the promulgation of such order, the necessary operation of such Act and such order clearly demonstrates that in the enactment of such legislation the Legislature, and in the promulgation of such order the defendants composing the Railroad Commission, with an eye not single to the prevention of waste or to the serving of any lawful purpose from the standpoint of the public, but with the dominating purpose of serving the needs and interest of private producers by arbitrarily curtailing the right of complainant to produce gas from its own wells to the extent of its market outlet, were attempting, and the defendants composing the Railroad Commission are now attempting, to serve the needs and minister to the financial

and economic difficulties of private persons, to-wit, those who own wells capable of producing gas from the same common reservoir, for which they have provided no present market outlet. Even if the public interest or public welfare be served through the operation and effect of said Act and such orders, which complainant denies, such result is only an incidental and minor result and not the dominating and important effect of said Act and such orders in their practical operation, and said Act and orders transcend public necessity and are arbitrary and unreasonable.

(h) Under the laws of the State of Texas the uses for which natural gas may be produced from wells producing natural gas only are limited, and as so limited, declared to be nonwasteful. Natural gas from wells producing gas [fol. 33] only can not be produced and stored, and hence, in the very nature of things, can be lawfully produced only as used or marketed. There can, therefore, be no such thing as the lawful production of gas in excess of market demand and lawful use. There is no market for natural gas produced from said reservoir in which complainant's gas is contained save and except such private markets as each producer has provided for such producer's gas, after the expenditure of large sums of money in acquiring sufficient gas reserves, constructing pipe lines, gathering systems, and other marketing facilities, and in procuring private market contracts. Said Act purports to authorize said Railroad Commission to apportion such private markets among all producers, without regard to whether a particular producer has contributed to the development of such markets, and its necessary operation and effect is to direct the said Commision to take from some producers a part of their private market and apportion the same to other producers, a perfectly futile act for the obvious reason that one producer can make no use of the private market of another producer in the absence of some agreement between them. In the light of such futility, such Act is clearly confiscatory, arbitrary and unreasonable, because it deprives the producer whose market is in part so apportioned to another of valuable property and property rights which he is justly and equitably and lawfully entitled to enjoy.

(i) The Act and orders under attack necessarily impose upon complainant the enormous expenditure which com-

plainant will have to incur in building pipe lines and pipe line connections necessary to connect its pipe line with the wells nearest its pipe line in order to provide it with gas necessary to meet its market requirements, as set forth in this bill, which expenditures are wholly unnecessary in [fol. 34] view of the fact that complainant has more than an adequate supply of natural gas of its own to meet all its market requirements.

(j) The total volume of gas contained in the general reservoir from which complainant's wells are capable of producing gas is being rapidly depleted of its content of natural gas through the withdrawal of gas in connection with the operation of the more than 2000 oil wells and hundreds of gas wells producing gas from said geological structure, as hereinabove set forth. Complainant's only protection against such drainage and such depletion and loss to it is to drill gas wells on its leases and produce the gas therefrom as its markets are developed, and this it has an absolute right to do under the laws of Texas. Under the necessary operation of said Act and such orders, it will of necessity be deprived of the right to supply with its own gas that part of its market outlet which it shall supply with gas purchased from others, with a total net loss to it of the same volume of natural gas that it shall be forced to purchase under the necessary operation and effect of said Act and such orders.

XX

Said Act and such orders are unconstitutional and void as against complainant in that they are violative of the commerce clause of Section 8, Article I, of the Constitution of the United States, because they interfere with and unreasonably burden interstate commerce, in this:

All the natural gas belonging to complainant and held in its reserves affected by said Act and such orders has been sold in interstate commerce under contract with said Consolidated Gas Service Company, and those with whom the latter has made contracts and commitments, under the terms of which contracts and commitments complainant is required to furnish and deliver gas from its reserves up to the requirements of Consolidated Gas Service Company, [fol. 35] as hereinabove set out. The natural gas from reserves of complainant has been sold and will be sold for

delivery in one continuous movement from the bottom of complainant's wells through the well casing and pipe lines to the pipe line of said Consolidated Gas Service Company for immediate and continuous movement through the latter's pipe lines to points outside the State of Texas, for delivery in turn to the distributors and users of natural gas to whom it has agreed to sell and deliver the same as aforesaid. The contract between complainant and Consolidated Gas Service Company and the contracts involving the delivery of complainant's gas by said company to those to whom it has made commitments and contracts for delivery of natural gas as aforesaid were and are transactions in interstate commerce, and the sale and delivery of complainant's gas through its well casing and pipe lines to Consolidated Gas Service Company for immediate and continuous moving through the latter's pipe lines to markets provided and arranged in States outside the State of Texas, as aforesaid, constitute transactions in interstate commerce. Th[illegible]nforcement of said Act and such orders will delay, hinder and prevent the movement in interstate commerce of the gas from the reserves of complainant through its pipe lines and through the pipe lines of said Consolidated Gas Service Company to points outside the State of Texas. The delay, loss and injury incident to the enforcement of said Act and such orders constitutes an unlawful interference with transactions in interstate commerce, and places on the movement in interstate commerce of complainant's gas an unreasonable and unlawful burden.

XXI

The Railroad Commission of Texas is an executive body created under the Constitution and laws of the State of Texas, and its members are executive officers of the State of Texas who have been clothed with administrative powers [fol. 36] of a non-judicial character. Section 1, Article II, of the Constitution of Texas, reads as follows:

"The powers of government of the State of Texas shall be divided into three distinct departments, each of which shall be confined to a separate body of magistracy, to-wit: Those which are legislative to one; those which are executive to another; and those which are judicial to another; and no person or collection of persons being of one of these

departments shall exercise any power properly attached to either of the others, except in the instances herein expressly permitted."

Section 1, Article V, of the Constitution of Texas reads as follows:

"The judicial power of this State shall be vested in one Supreme Court, in Courts of Civil Appeals, in a Court of Criminal Appeals, in District Courts, in County Courts, in Commissioners Courts, in Courts of Justices of the Peace, and in such other courts as may be provided by law."

Complainant shows that there is no provision in the Constitution of Texas whereby the Railroad Commission of Texas, an executive board, and the members thereof, who are executive officers of the State, may exercise any character of judicial or legislative function. In this connection complainant shows that the only power and authority conferred on the Railroad Commission by the Constitution of Texas are executive in character and not legislative or judicial, and the Legislature of Texas is without authority to confer upon the Railroad Commission any judicial function or legislative power. Said Act defining the duties of the Railroad Commission in connection with its enforcement purports to confer upon the Railroad Commission power and authority both legislative and judicial in character; and the defendants composing the Railroad Commission, in the promulgation of the orders of which complaint is made in this bill, seek to exercise powers which are in some aspects thereof purely judicial and in other aspects purely legislative, in this:

[fol. 37] (a) The Railroad Commission is directed by such Act to inquire into the production and reasonable market demand therefor, and to determine the allowable production from such common source of supply, which shall be the reasonable market demand which can be produced without waste. Such provision of said Act is an attempt by the Legislature to confer upon the Railroad Commission legislative power to ascertain the reasonable market demand, which necessarily involves consideration of price, and to determine the allowable production from the common source of supply without prescribing the standard by which the market demand and the allowable

production shall be determined, which power the Legislature is without authority to delegate to the Railroad Commission.

(b) Said Act requires the Railroad Commission to allocate, distribute and apportion the allowable production from the common source of supply among the various producers on a reasonable basis, and to limit the production of each producer to the amount allocated or apportioned to such producer. Said Act also provides for a hearing, after due notice, at which hearing evidence shall be heard upon which it shall base such allocation, distribution or apportionment. By such provision the Legislature purported to confer on the Railroad Commission functions that are purely judicial, in that the allocation, distribution or apportionment of the production from the common source of supply, common pool, or portion thereof, among the producers upon a reasonable basis necessarily involves an examination into the legal rights and the extent of the property rights of each producer in the common source of supply, common pool, or portion thereof, which examination are of a purely judicial character.

(c) Said Act, particularly Section 10 thereof, directs the Railroad Commission to prorate and regulate production [fol. 38] of natural gas for the protection of public and private interests in the prevention of waste, as waste is de--ined in the Act, and in the adjustment of correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas as permitted in the Act. Nowhere in said Act is the term "correlative rights and opportunities" defined, and nowhere in said Act is any standard set up by which the Railroad Commission is to ascertain the correlative rights and opportunities of the owners of natural gas in a common reservoir to produce and use such gas. This requirement, in the light of the context of the Act, places in the Railroad Commission the full power and authority to determine and declare what are the correlative rights and opportunities of the owners of gas in a common reservoir to produce, use and sell the same. If said Act operates as an attempt by the Legislature to modify or change the property rights of the owner in a gas well as declared by the courts of last resort of the State of Texas, as hereinabove set forth, then the term

"correlative rights and opportunities" has no such definite, fixed and known meaning as to be a matter of common knowledge, and in any effort to carry out such requirement of said Act the Railroad Commission would necessarily have to determine and define the correlative rights and opportunities of such owners of gas wells in a common reservoir, which is a legislative function, and attempt to adjust such correlative rights and opportunities after having determined same, which is a judicial function. Such provisions of the Act are for the reasons stated null and void.

(d) Such orders of the Railroad Commission, insofar as they purport to fix and establish the allowable production and the reasonable market demand therefor, constitute an effort on the part of the Railroad Commission illegally to exercise legislative power which the Legislature [fol. 39] was without authority to delegate to the Railroad Commission, and same is therefore void and unenforcible as to complainant.

(e) Such orders, insofar as they purport to allocate, distribute and apportion the allowable production from the common source of supply among the various producers on a so-called reasonable basis, and insofar as they undertake to limit the production of each producer to the amount allocated to such producer, are void and unenforcible as against complainant for the reason that they constitute an effort on the part of said Commission to exercise functions purely judicial in character, in violation of the constitutional provisions above referred to.

(f) The orders hereinabove referred to, insofar as they purport to determine and declare the correlative rights and opportunities of each owner of gas in a common reservoir to produce gas and sell such gas as permitted under the terms of the article, are void and unenforcible as against complainant for the reason that they constitute an effort on the part of said Commission to exercise functions purely legislative in character, in violation of the constitutional provisions above referred to.

(g) Such orders, insofar as they purport to adjust such correlative rights and opportunities of owners of gas in a common reservoir to produce, use and sell such gas as per-

mitted under the terms of the Act, are void and unenforcible as against complainant for the reason that they constitute an effort on the part of the Commission to exercise functions purely judicial in character, in violation of the constitutional provisions above referred to.

XXII

Said Act and such orders are unconstitutional and void as against complainant in that they operate to take complainant's property and deprive complainant of its liberty and its property as hereinabove set forth, in violation of [fol. 40] the due process of law clause of the Fourteenth Amendment to the Constitution of the United States, and in violation of Sections 16, 17 and 19, Article I, of the Constitution of Texas, and in that they operate to take, damage and destroy complainant's property for a purported public use and apply same to a purported public use, without adequate compensation being made and without complainant's consent, in violation of Section 17, Article I, of the Constitution of Texas, in this:

(a) Said Act is fatally indefinite and uncertain in meaning insofar as it directs the Railroad Commission to inquire into the production and reasonable market demand therefor, and to determine the allowable production from such source of supply, which shall be the reasonable market demand which can be produced without waste. The term "market demand" has no well-defined meaning. It involves considerations of price, accessibility to markets, quality and suitability for commercial use of the gas from particular wells, and an infinite number of considerations which the Railroad Commission is not authorized or directed by said Act to consider in arriving at the so-called market demand. The demand for natural gas is subject to great change and fluctuation, increasing when the weather is cold and decreasing when the weather is warm. It is impossible for the Railroad Commission in advance to anticipate what volume of natural gas would constitute the market demand on any given date or over any given period. Any volume of gas which the Railroad Commission might determine to be the market demand for any given time or over any given period could not possibly be more than a mere guess, and complainant cannot be required to

conform its conduct in the use of its property each day to a mathematical standard supplied by an agency such as the Commission and based upon a mere guess.

[fol. 41] (b) Said Act is fatally indefinite and uncertain in meaning insofar as it directs the Railroad Commission to allocate, distribute and apportion the allowable production from the common source of supply among the various producers on a reasonable basis, and to limit the production of each producer to the amount allocated or apportioned to such producer. The term "reasonable basis" is a vague and uncertain term which has no well-defined meaning as applied to the curtailment of the production of natural gas from complainant's wells. The right of complainant to produce its gas involves a consideration of the volume of gas owned by it in the common reservoir, which of necessity requires that due consideration be given to the size of the lease on which any given well is located, the position of such lease on the general geological structure, the reservoir pressure at the particular well on such lease, and other factors which the Railroad Commission is not directed or required to consider. In allocating, distributing or apportioning the allowable production from the common source of supply among the various producers on a reasonable basis, the Railroad Commission is given no standard upon which to arrive at such reasonable basis, and is not directed to consider the factors and the elements which are proper or to disregard considerations which are improper, but is left to act upon its own discretion without any standard of conduct prescribed by the Legislature in arriving at such so-called reasonable basis. Complainant cannot be required to conform its conduct in the use of its property each day to a standard or basis supplied by the Railroad Commission arbitrarily and without reference to any statutory guide or standard prescribed by the Legislature.

(c) Said Act, and particularly the introductory paragraph and Subdivision B of Section 10 thereof, is fatally in-[fol. 42] definite and uncertain in meaning insofar as it directs the Railroad Commission to prorate and regulate the production of natural gas from each common reservoir in the State for the protection of public and private interests, and to adjust the correlative rights and opportunities of each owner of gas in a common reservoir to produce and

use or sell such gas as is permitted to be produced under the terms of the Act. The terms "public and private interests" and "correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell gas" are vague and uncertain and have no well-defined meaning as applied to the curtailment of production of natural gas from complainant's wells, and the Commission is given no standard by which to determine the public and private interests it is directed to protect, or to determine the nature, character and extent of the correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas, but is necessarily required, in undertaking the performance of such directions, to indulge in speculation and mere guessing at the character of the public and private interests it is directed to protect and the nature, character and extent of the correlative rights and opportunities it is directed to adjust under the terms of said Act.

(d) Said Act, and particularly Section 20 thereof, is arbitrary, unreasonable and confiscatory in that the practical operation thereof is to restrict the production of natural gas from the common reservoir from which complainant's wells are producing natural gas to a quantity less than the actual market outlet therefor, unless and until complainant and others desiring to produce gas and market the same through the facilities which they have provided for such purposes shall first offer to the owner of every gas well in the field a price which the Railroad Commission [fol. 43] shall thereafter ascertain to be reasonable, without regard to the availability of such gas to complainant's pipe lines or to the pipe lines of others similarly situated, or to the desire or willingness of such owner to sell gas from such well to complainant or others similarly situated.

(e) Said Act, and particularly Section 20 thereof, is unreasonable, arbitrary and confiscatory of the rights, liberty and property of complainant in that it, by indirection, seeks to confer upon the Railroad Commission the right to fix prices, which the Legislature itself is without power and authority to do, thus depriving complainant and those similarly situated of their constitutional right to bargain and contract with those from whom they might desire to

purchase gas at arm's length and upon such terms as might be agreeable to both parties.

(f) The orders of the Railroad Commission here under attack were based largely, if not entirely, upon the statutory provisions referred to in Paragraphs (a), (b), (c), (d) and (e) of this section of complainant's bill, and for the same reasons assigned as establishing the nullity of such statutory provisions, such orders are void and unenforcible as against complainant insofar as they undertake or purport to effectuate such unconstitutional statutory provisions.

XXIII

The effect of said Act, if valid, would be to divest complainant of its title and ownership of such natural gas in place and to destroy complainant's property right in such gas entitling it to produce the same and market the same as rapidly as it could be marketed for lawful purposes and uses without waste, and to give it in lieu thereof some indeterminate interest in a common pool or general reservoir, with the right to produce only under license from the State [fol. 44] of Texas, through the Railroad Commission, from such common pool or general reservoir, and making that right contingent in practical effect upon complainant's dividing its markets and marketing facilities with those who have provided themselves with no markets or market facilities, or those who have provided themselves with markets and market facilities for a less proportion of their potential production than has complainant, and for that reason said Act is invalid because in violation of complainant's rights in its property and its liberty of contract under the due process clause and freedom of contract clause of the Fourteenth Amendment to the Constitution of the United States.

XXIV

Complainant further represents that even if said Act is valid and constitutional, and even if under the provisions thereof the Railroad Commission of Texas has the authority to fix the allowable production from the common reservoir wherein complainant's gas is contained and to apportion such allowable production among producers from such

reservoir, nevertheless it is required by the express provisions of said Act that such apportionment shall be made on a reasonable basis. The apportionment of the allowable production from said reservoir made and effected by said orders is grossly unreasonable, arbitrary and confiscatory as to this complainant in that (a) said orders limit the production by this complainant from its gas reserves to a quantity of gas insufficient to enable this complainant to supply its existing markets from its gas reserves, notwithstanding its ability to supply its existing markets from its gas reserves without waste; (b) said orders permit the production of a part of the allowable production by others without markets or market facilities who can make no use [fol. 45] of such part apportioned to them unless complainant or others similarly situated, who have been likewise deprived of part of their markets, shall divide their markets and market facilities with them; and (c) the effect of such orders is either to restrict the actual production to less than the allowable, that is to say, to less than the Commission has found to be the market demand which can be produced without waste, or to require complainant and others similarly situated and affected to purchase the gas produced by those to whom production has been apportioned, but who are without market and market facilities. It thus results that complainant is by such apportionment deprived of a part of its markets for its own gas which have been provided by it at great expense, without compensation to it and without its consent, and such part of its markets of which it is so deprived, or at least the opportunity to enjoy the same resulting from complainant's deprivation thereof and the probable necessity to which complainant is subjected of purchasing gas from others to supply its markets, is conferred upon others who have contributed nothing to the creation or maintenance thereof. Said orders, having such results, are so clearly confiscatory, arbitrary and unreasonable that they are violative of the due process and equal protection clauses of Section 1 of the Fourteenth Amendment to the Constitution of the United States, and of Sections 16, 17 and 19, of Article I, of the Constitution of the State of Texas.

XXV

That portion of said Act which requires that the Commission shall not take into account the size of the tract

upon which any gas well or wells are located in excess of the efficient drainage area of such well or wells producing at 25% of the daily productive capacity, and that portion [fol. 46] of Section F of the order dated *of the order dated* September 25th, 1935, purporting to fix the efficient drainage area of wells located in the East Panhandle field under present conditions at 160 acres, are manifestly unreasonable, arbitrary and confiscatory as applied to complainant in this: some of complainant's leases have never been developed; but such leases, aggregating more than 8810 acres of proven gas producing area, constitute a part of complainant's reserves of natural gas and were acquired by it at enormous cost, as hereinabove set forth. Such undeveloped leases are being constantly depleted of their gas through drainage to wells located in the many low pressure areas, which have resulted from heavy withdrawals of gas in portions of the common reservoir as hereinabove set forth. The necessary operation and effect of those portions of said Act and said order above referred to give no consideration to the ownership of such reserves by complainant and afford no protection against the drainage which has been occurring, is occurring and will continue to occur for an indefinite period, as hereinabove alleged, but force complainant to submit to such drainage and the attendant losses incident thereto or to drill numerous wells on said undeveloped reserves at tremendous cost to it, all of which wells are unnecessary at this time in order to supply its market requirements for natural gas. Such provisions of the Act and order likewise enable and permit the owners of wells already drilled, many of which wells are located on small tracts ranging as low as 5 acres or less, to produce and market enormous quantities of gas not originally underlying their leases but underlying the undeveloped leases of complainant and others similarly situated, without enabling complainant and those similarly situated to increase the production from their own wells to protect themselves against such drainage. For the reasons stated in this paragraph, such provisions of said Act and order [fol. 47] inevitably operate to take complainant's property without due process of law and deprive it of its property without compensation and without its consent, in violation of the due process of law clause of the Fourteenth Amend-

ment to the Constitution of the United States and the other constitutional provisions hereinabove expressly pleaded.

XXVI

Complainant represents that it has the legal right, so long as it can do so without waste, to produce, transport and sell its own gas; that it is under no legal or moral obligation to purchase gas from others, nor to divide with others its markets or marketing facilities; that the necessary operation and effect of said Act and said orders, if enforced, will be to put complainant in position where it cannot supply its market demands with its own gas, and where it can supply its market demands only by purchasing gas from others, if that be possible; that the consequence will be that complainant will be subjected to and suffer great, immediate and irreparable loss and damage, which will continue to increase and amount ultimately to millions of dollars, by reason of its inability to produce and sell its own gas, the drainage of its gas through the operations of others, the probable loss or at least impairment of its market contracts and market outlets, and the interruption of, interference with, and burden upon its business, particularly its interstate business, founded and definitely established and heretofore orderly conducted upon the basis, planned and provided by it at great expense, of adequate reserves of gas with adequate production and transportation facilities to insure a sufficient, constant and dependable supply of gas to its customers. Complainant has no adequate remedy at law to protect itself against such [fol. 48] loss and damage, which can be avoided and prevented only through the enjoining of the enforcement of said Act and said orders, which complainant represents are null and void and unenforcible as against it for the reasons hereinabove set forth. The defendants composing the Railroad Commission of Texas have announced their purpose to enforce said Act and said orders, and they will enforce and attempt to enforce said Act and said orders, against complainant, and from time to time promulgate other similar orders, with the result that complainant will suffer the deprivation of its liberty of contract, loss of property, impairment of its contracts, and all the other wrongs and injuries hereinbefore averred in this bill; or, in the alternative, complainant will be forced to operate in violation

of said Act and said orders and thus incur the danger of having to defend against harassing suits for penalties and other litigation directed at complainant with a view of forcing it to comply with said Act and said orders. In the event complainant should undertake to operate in violation of said Act and said orders, the defendants composing the Railroad Commission will doubtless direct the defendant William McCraw, Attorney General of Texas, to file such penalty suits and other litigation against complainant, with a view of forcing complainant to observe and obey said Act and said orders, and the defendant William McCraw will in all probability file penalty suits, injunction proceedings and other litigation against complainant, and complainant will be forced to incur great expense and costs incident to the defense of such suits, to its irreparable damage. In this connection complainant shows that the penalties provided for under the terms of said Act, particularly Section 23 of said Act, are oppressively high in that same might amount to $1000.00 for each day's violation of any of the provisions of said orders, rules, and regulations of [fol. 49] the Commission, and the operation of each well in violation of such orders, rules and regulations would constitute a separate offense, so that complainant would be subject to a possibility of being sued for $12,000.00 for each day that it might operate its twelve wells in violation of said orders. Against all these losses, injuries, damages and prosecutions, complainant would have no adequate remedy at law, and if not granted the relief for which it prays herein, complainant will suffer irreparable loss and injury.

Wherefore, premises considered, complainant prays that pending a hearing on the application of complainant for a temporary or interlocutory injunction as hereinafter prayed for, this Honorable Court issue a temporary restraining order, restraining and enjoining the defendants and each of them, their deputies, assistants, employees, subordinates, clerks, successors in office, and all other persons with authority to act with or under them or in their respective places, from enforcing or attempting to enforce, by order, rule, suit, regulation or otherwise, said Act or such orders, or any clause or provision thereof, or promulgating any similar rule or order that would result in curtailing complainant's right to produce its gas from its

wells and leases located as aforesaid up to the quantity for which it shall be able to find a market for legitimate and proper purposes; that a Three-Judge Court be constituted as provided by the Judicial Code, and that upon hearing before such Three-Judge Court complainant be granted a temporary or interlocutory injunction, restraining each and all of the defendants, their deputies, assistants, employees, subordinates, clerks, their successors in office, and all other persons with authority to act with or under them or in their respective places, from enforcing or attempting to enforce, [fol. 50] by order, rule, suit, regulation, or otherwise, any provisions of said Act or such orders, or any other similar order that may be hereafter promulgated by the defendants composing the Railroad Commission, or any of them, to the same purport or end; that upon final hearing complainant have judgment declaring said Act and such orders void and unenforcible, together with a decree perpetually enjoining the defendants and each of them from any effort to enforce said Act and such orders, from collecting or attempting to collect from complainant any penalties for violating said Act or such orders, and from promulgating any other order to the same purpose or end; and that complainant have judgment against the defendants and each of them for costs of suit and all equitable relief to which complainant may show itself justly entitled.

C. C. Mount, Morgan, Culton, Morgan & Britain, Attorneys for Complainant, Texas Panhandle Gas Company. S. A. L. Morgan, Chas. H. Keffer, of Counsel.

Duly sworn to by C. C. Mount. Jurat omitted in printing.

[fol. 51] [File endorsement omitted.]

[fol. 52] IN UNITED STATES DISTRICT COURT

No. 539. In Equity

[Title omitted]

ORDER SUBSTITUTING CONSOLIDATED GAS UTILITIES CORPORATION FOR COMPLAINANT—Filed December 6, 1935

On this the 6th day of December, A. D. 1935, came on for consideration by the Court, in chambers, the application

of Consolidated Gas Utilities Corporation to be substituted as complainant for Texas Panhandle Gas Company in Cause No. 539 in Equity, styled as above; and it appearing to the Court that said Consolidated Gas Utilities Corporation is entitled to be substituted for the original complaint in said cause:

It is ordered that it be and is here now substituted for Texas Panhandle Gas Company as complainant in the above entitled and numbered cause, with full authority to prosecute said cause as the complainant therein.

(Signed) Robert J. McMillan, United States District Judge.

[File endorsement omitted.]

[fol. 53] In United States District Court

No. 539. In Equity

[Title omitted]

Complainant's Amendment to Substituted Bill—Filed January 2, 1936

To Said Honorable Court:

Now comes Consolidated Gas Utilities Corporation, a corporation, substituted for the original complainant herein, hereinafter called complainant, and complains of Ernest O. Thompson, C. B. Terrell and Lon A. Smith, composing the Railroad Commission of Texas, and William McCraw, Attorney General of Texas, hereinafter called defendants, and represents to the Court that since the filing of complainant's bill in this cause and since the issuance of an interlocutory injunction herein, said defendants composing the Railroad Commission, purporting to act under authority of House Bill 266, referred to in plaintiff's bill of complaint herein, have issued an order captioned "Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas" bearing date December 10th, 1935, and about the same time said defendants issued a schedule purporting to fix the daily allowable production of gas from each gas well in the Panhandle District of Texas, which schedule was endorsed "Effective 7 A. M.

[fol. 54] December 11th, 1935, and until further notice." A copy of said so-called special order, marked Exhibit "A", and a copy of said so-called schedule of allowables, insofar as the latter affects wells in the East Panhandle field or zone belonging to complainant, marked Exhibit "B", are attached hereto and by reference expressly made a part of this pleading.

In its legal effect, said so-called special order is substantially the same order as the order before the Court at the time the Court was considering complainant's application for interlocutory injunction. The schedule fixing the allowables differs from the schedule issued in connection with the order before the Court at the time it was considering complainant's application for interlocutory injunction in that it increased the quantity of gas which complainant was allowed to produce from its wells to an aggregate of 7,811,000 cubic feet daily. However, complainant now has a market for 19,484,000 cubic feet of gas daily, and said order and schedule of allowables, if enforced against complainant, would require complainant to divide its markets with other persons to the quantity of 11,673,000 cubic feet daily.

Thereafter, on December 18th, 1935, the defendants composing the Railroad Commission of Texas issued still another special order purporting to fix the allowables production of sweet and sour natural gas in the Panhandle District of Texas, a copy of which so-called special order, marked Exhibit "C", is attached hereto and made a part of this pleading. Said order is substantially to the same legal effect as the so-called special order copy of which marked Exhibit "A" is attached hereto, and the same affects the legal and equitable rights of complainant in the same manner and is therefore null and void for the reasons urged in complainant's bill filed in this cause and this amendment [fol. 55] thereto. Under the schedule of allowables issued in connection with said special order dated December 18th, 1935, complainant will have to divide its markets and marketing facilities with others in that it will have to purchase from others who are not interested in complainant's markets and market facilities a total of — cubic feet per day during the continuance of said special order through the month of January, 1936, and until such date thereafter as the same may be succeeded by a subsequent order of a similar nature.

Said orders above mentioned and said schedules of allowables are subject to the same constitutional objections urged by complainant against the orders and schedules in force at the time this Court was considering complainant's application for interlocutory injunction, and same are null and void as applied to complainant and complainant's wells mentioned in its bill of complaint herein for the same reasons urged in said bill of complaint. Complainant adopts all of its allegations contained in said bill of complaint heretofore filed, and urges all the grounds set forth therein as against the so-called special orders and schedules promulgated by the defendants composing the Railroad Commission as above set forth, to the end that said so-called special orders and schedules be declared null and void as applicable to complainant for the reasons set forth in its bill of complaint filed herein.

Wherefore, complainant prays that judgment be entered as prayed for by complainant in its bill of complaint heretofore filed, and that such judgment in all things cover the special orders and schedules promulgated by the defendants composing the Railroad Commission on December [fol. 56] 10th, 1935, and December 18th, 1935, and that it have such other and further relief in equity to which it shall show itself entitled.

C. C. Mount, Chas. H. Keffer, Morgan, Coulton, Morgan & Britain, Attorneys for Complainant. S. A. L. Morgan, of Counsel.

Duly sworn to by C. C. Mount. Jurat omitted in printing.

[File endorsement omitted.]

[fol. 57] IN UNITED STATES DISTRICT COURT

No. 539. In Equity

[Title omitted]

ANSWER TO COMPLAINANT'S AMENDED OR SUBSTITUTED BILL OF COMPLAINT—Filed January 2, 1936

To Said Honorable Court:

Come now Ernest O. Thompson, C. V. Terrell and Lon A. Smith, composing the Railroad Commission of Texas,

and William McCraw, Attorney General of Texas, defendants in the above entitled and numbered cause, and filed this their answer to the amendad or substituted bill of complaint filed by complainant herein.

1

Defendants admit the allegations contained in paragraph I of the bill of complaint.

2.

Defendants admit that this court has jurisdiction of this controversy.

3

Defendants admit that complainant is engaged in the business of producing, transporting and selling natural gas from its wells located in Wheeler County, Texas; but de- [fol. 58] fendants have no knowledge of the total amount of acreage or leases owned by said complainant or of the amount of interest owned in said leases. Defendants have no knowledge of the number of miles of pipe line owned by the complainant, nor of the investment the complainant has in same.

4

Defendants have no knowledge of the company to which complainant sells its gas, nor of the companies which constitute a part of the project of which complainant is a part, nor of the cities supplied with gas by complainant, or those to whom it sells gas. Defendants deny that the domestic users of gas furnished by said company are dependent upon the gas produced from the wells and leases of complainant for their supply of gas.

5

Defendants have no knowledge of the investments in pipe lines, etc., made by the distributing companies to which complainant sells gas.

6

Defendants have no knowledge of the open flow capacity of the 12 wells owned by complainant in Wheeler County,

nor of the present requirements of the users of gas who are supplied with gas from said 12 wells. Defendants deny that said 12 wells are capable of producing the present daily requirements of such domestic and industrial users of gas without waste, or that they are capable of producing more than such daily requirements without causing physical waste.

[fol. 59]

7

Defendants admit that it is impossible to store natural gas or to transport it in commercial quantities other than by pipe lines. Defendants admit that the construction and maintenane of natural gas pipe lines involve enormous investments, but they have no knowledge of the matters and things which must be taken into account before a natural gas pipe line can be financed or constructed. Defendants deny that the reserves owned and held by the complainant at the present time are sufficient to meet its market requirements, unless complainant is permitted to continue its present scheme of operations, whereby these defendants say complainant has already produced more gas from its wells than was originally under the leases on which its wells are located.

8

Defendants admit that there are large reserves of natural gas suitable for fuel in the Panhandle of Texas, and that all the available markets in the vicinity of such areas have been and are being supplied with natural gas.

9

Defendants have no knowledge of the things and matters which it is necessary to do or take into account to finance a pipe line or market gas in commercial quantities, nor the things which it is necessary for the complainant to do for the financing of its pipe lines.

10

Defendants have no knowledge of the disposition made by complainant of gas produced from its wells; but defendants deny that complainant is engaged in interstate com-

[fol. 60]

merce insofar as the producing of gas is concerned. In this connection defendants affirmatively allege

that the production of gas is a local matter and gas does not become an object of commerce until the act of production has ceased.

11

Defendants have no knowledge of the contract which complainant has with the Consolidated Gas Service Company; but in this connection defendants say that any contract which it has was entered into and is subject to the appropriate exercise by the State of Texas of its police power in regulating the production of gas from complainant's wells.

12

Defendants admit that there are many leases and wells in the East Panhandle field the owners of which do not have a market for the sale of their gas for purposes permitted by H. B. 266 enacted by the 44th Legislature. Defendants deny that owners of such wells have not used diligence in undertaking to secure a market for their gas for such authorized purposes; but allege that it is beyond the power of the average owner of a producing gas well to procure sufficient money to finance the building of a pipe line to the distant wells which it is necessary to transport gas from the Panhandle gas field before it can be sold.

Defendants deny the allegations of fact and law contained in paragraph 12 of the bill, except as expressly admitted herein, and affirmatively say that complainant's obligations in the matter of producing gas from its wells are those which arise by the terms and enforcement of H. B. 266 and the orders of the Commission adopted pursuant thereto.

[fol. 61] 13

Defendants admit the adoption of H. B. 266 by the 44th Legislature as alleged in paragraph XIII.

14

Defendants have no knowledge of the purposes of H. B. 266 except as said purposes are revealed by the history and provisions of said act. Defendants admit that complainant and other pipe lines similarly situated are the only persons, firms and corporations now in business who take and trans-

port to markets gas for the purposes authorized by said H. B. 266; and defendants further say that by virtue of this fact complainant, and those pipe lines similarly situated, enjoy a monopoly to their ownership of the sole market for gas for such purposes, which possession of monopoly will continue indefinitely. Defendants deny the allegations of fact and law contained in said paragraph XVI, except as expressly admitted herein.

15

Defendants admit that the Railroad Commission intends to enforce H. B. 266, and that the orders and schedules pleaded in paragraph XV have been promulgated by the Commission. Defendants deny that the findings of fact contained in said orders were not supported by credible testimony introduced at the hearings before the Commission. Defendants deny that substantial testimony was not introduced that the restriction of the production of gas when ratably distributed among the various wells capable of producing gas will prevent physical waste as defined in said act, and will result in a greater ultimate recovery of gas from said fields and will result in a more efficient drainage from said reservoir by the producing wells.

[fol. 62] Defendants likewise deny that the finding by the Commission that the restriction of the production of gas to the market demand therefor was without substantial evidence to support it. In this connection defendants allege that it is made the mandatory duty of the Commission by the provisions of H. B. 266, in the protection and adjustment of the correlative rights and opportunities of various producers of gas, to order the total production of gas from all wells restricted to the market demand for such gas whenever the total potential ability of such well is in excess of the daily market demand for such gas; and the Commission, in its finding that the restriction ordered in the East Panhandle gas field was necessary to protect the correlative rights and opportunities of producers, was following the mandatory requirements of said H. B. 266.

Defendants say that complainant's rights to produce gas from its wells are subject to the valid exercise of the police power of the State and especially to the provisions and re-

quirements of H. B. 266 and the orders of the Commission promulgated thereunder. Defendants deny that gas from complainant's wells has been or is being produced without the commission of physical waste as defined by H. B. 266. Defendants deny that the necessary operation and effect of the orders of the Commission is not to protect correlative rights of other owners of gas wells in said common reservoir for the reasons complainant, and those integrated companies similarly situated, enjoy a monopoly on all the market outlets for sweet gas for purposes authorized by H. B. 266, and if complainant, and those companies similarly situated, are permitted to withdraw all the gas required to supply the market requirements from their own wells, the owners of other wells which do not enjoy a share [fol. 63] in said monopolistic outlet would not be able to produce any gas at all from said wells or the gas under the leases on which said unconnected wells are located will in time be drained from beneath said leases and produced through the wells belonging to complainant and those similarly situated.

All allegations of fact not expressly admitted in paragraph 15 are denied.

16

Defendant- deny the allegations and conclusions of fact and law contained in paragraph X, and say that complainant's rights in the way of producing gas from its wells and the rights of other owners of producing gas wells and the duties of the Railroad Commission of Texas arises by virtue of the operation and enforcement of H. B. 266. Defendants have no knowledge of the purpose and intent of the Legislature in promulgating said act except as is revealed from the history and provisions of said act.

17

Defendants admit that it was the purpose and intent of H. B. 266 to prevent complainant, and those similarly situated, from supplying their entire market requirements from their own wells. Defendants deny that complainant is not engaged in a business which is affected with the public interest. Defendants deny that the Legislature of Texas is not empowered to regulate the operation and business of

complainant insofar as same is affected by the enforcement of the terms and provisions of H. B. 266 and the orders of the Commission promulgated thereunder.

[fol. 64] 18

Defendants have no knowledge of the allowable — allocated to the wells of complainant under the present orders and schedules of the Railroad Commission or of the amount of gas necessary to supply complainant's market. Neither do defendants have any knowledge of the percentage of the producing capacity of complainant's wells which complainant will be permitted to produce under the orders and schedules of the Railroad Commission. Defendants have no knowledge of the number of wells to which it will be necessary for complainant to make additional connections in order to supply its market; but in this connection defendants allege that there is sufficient gas available to complainant in said East Panhandle field to supply its market without the expenditure of large sums of money and without building of additional pipe lines. All other allegations of fact contained in paragraph XVIII are denied.

19

Defendants deny that H. B. 266 enacted by the 44th Legislature and the orders adopted by the Commission pursuant thereto are unconstitutional and void for the reasons assigned in paragraph XIX, or for any other reason. The allegations of fact and law contained in said paragraph are denied.

20

Defendants deny that said act and said orders of the Commission are in conflict with interstate commerce clause of the United States Constitution. In this connection defendants say that the provisions of H. B. 266 and the orders of the Commission affect only the matter of producing gas [fol. 65] from gas wells located in the State of Texas, which is purely a local matter and one which the police power of the State of Texas is entitled to operate against. Defendants have no knowledge of the disposition made by complainant of its gas; but say that the matter of the disposition of the gas after it is produced is actually immaterial

insofar as the validity of H. B. 266 is concerned, in that said act does not affect the business of complainant after said gas is produced, but only affects and operates on the business of complainant in the matter of how much gas it can produce from its own wells.

21

Defendants deny that any duty delegated to or power vested in the Railroad Commission of Texas by H. B. 266 is in violation of any provisions of the statute of the State of Texas or that same constituted an unconstitutional delegation of the legislative or judicial power for the reasons assigned in paragraph XXI, or for any other reason. All allegations of fact and conclusions of fact and law in said paragraph are denied.

22

Defendants deny that said act and the orders of the Commission adopted pursuant thereunder are unconstitutional and void for any of the reasons assigned in paragraph XXII, or for any other reason. All allegations of fact contained in said paragraph XXII and conclusions of fact and law are expressly denied.

23

Defendants deny that the effect of H. B. 266 would be to devest complainant of its title or ownership of natural gas in place.

[fol. 66] 24

Defendants deny that the appropriation or allocation of the allowable production made among the various wells in said field by the order of the Railroad Commission is unreasonable, arbitrary or confiscatory as to complainant for any of the reasons assigned in paragraph XXIV, or for any other reason. Defendants say that said act and said orders if enforced will have the effect of prohibiting complainant, and those similarly situated, from withdrawing a disproportionate amount of gas from said reservoir as compared with the withdrawals of other producers; and that such act and said orders constitute a valid exercise of the

police power of the State insofar as they regulate and affect the business of complainant's production of gas.

25

Defendants deny that the act is arbitrary in failing to take into account undrilled acreage which may be owned by complainant, although defendants have no knowledge of the amount of undrilled acreage owned by the Complainant. In this connection defendants say that H. B. 266 purported to regulate simply the business of producing gas, and that said act and said orders allocate to each producing well owned by complainant its fair share of the total amount of gas permitted to be withdrawn from the reservoir in which its wells are located. Defendants especially deny that the method adopted by the Railroad Commission in allocating production in said field operates arbitrary or unreasonably as applied to the peculiar situation of the complainant.

26

Defendants deny that complainant has the legal right to produce as much gas as it desires from its own wells, and [fol. 67] say that complainant's rights in the matter of producing gas from said wells are subject to the compliance with the terms and provisions of H. B. 266 and the orders of the Commission adopted pursuant thereunder. Defendants deny that complainant cannot secure sufficient gas in said East Panhandle field to supply its markets; and on the contrary affirmatively allege that the total allowable allocated to the wells in said field are entirely sufficient to supply the markets of complainant, and others who have a market available for light and fuel purposes. Defendants admit that they intend to enforce said act and said orders and that they would undertake to enforce same against the complainant except for the fact that they are enjoined from doing so.

27

By way of affirmative allegations defendants would further show to the court the following: That by the terms and provisions of the statutes of the State of Texas, which statutes were in force when complainant secured its permit

to do business in the State of Texas, it is provided that every corporation owning, operating, leasing or controlling within this State any wells, pipe lines, plant, property or permit (1) for sale or delivery of natural gas to the public for domestic or other use, (2) owning or operating or managing a pipe line for the transportation and carriage of natural gas either for public hire or if on any part of the right of way, which said line has been acquired or may be acquired by the exercise of the rights of eminent domain, or if said line or any part thereof is laid upon, over or under any public road or highway of this State or street or alley of any municipality, or the right of way of any of any railroad or other public utility; including also any [fol. 68] natural gas utility authorized by law to exercise the right of eminent domain,—is declared to be virtual monopoly and a business affected with a public interest, and said statutes provide that the business and property employed in such business within this State shall be subject to the provisions of said law and to the jurisdiction and regulation of the Railroad Commission and such businesses are declared to be affected with a public interest. Said statutes likewise provide that the operation of gas pipe lines for bearing, selling, transporting, producing, taking or dealing in natural gas is a business which in its nature and according to the established method of conducting a business is a monopoly and such gas pipe line so used or connected with such business is subject to the jurisdiction conferred upon the Railroad Commission. Said statute likewise provides, and provided when complainant secured its permit to do business in the State of Texas, that the Railroad Commission shall establish fair and equitable rules and regulations for the full control and supervision of said gas pipe lines in all their holdings pertaining to the gas business and in all their relations to the public as the Commission may from time to time deem proper, and shall prescribe and enforce rules and regulations for the government and control of such pipe line in respect to their gas pipe lines producing, receiving, transporting and distributing facilities.

Defendants say that said statutes, being articles 6050, 6051 and 6053, Revised Civil Statutes of Texas of 1925 were enacted in 1920 and have been a part of the statutory law of Texas continuously since that time and were a part

of such law at the time that the complainant secured its permit to do business in the State of Texas.

[fol. 69] That in view of the fact that complainant is a foreign corporation and that it secured its permit to do business in this State at a time when such statutes were in force, it should not now be heard to say that it is beyond the power of the State of Texas, or of the Railroad Commission of Texas to regulate the manner in which said complainant produces and withdraws gas in the gas fields of this State, nor should complainant be heard to say that it is not engaged in a business which is affected with the public interest and a virtual monopoly as declared by the law of the State of Texas at the time it secured its permit to operate in this State.

28

Defendants further say that complainant, and other integrated pipe line companies similarly situated, constitute the sole and only market for sweet gas for light and fuel purposes in the Panhandle gas field of Texas. That they, therefore, constitute a monopoly which is subject to regulation by an exercise of the police power of the State, and that if the provisions of H. B. 266 cannot be made effective, that said law would have the effect of dedicating all of the sweet gas producing portions of said Panhandle field to the uses and benefit of said complainant and those pipe line companies similarly situated, including the gas owned and under the lands and leases of other operators in said field who do not enjoy the benefit of the control of the market outlet which is owned by complainant and those similarly situated.

29

Defendants further say that prior to the promulgation of H. B. 266 and under said existing law as set forth in [fol. 70] the preceding paragraph of this answer more than one billion cubic feet of gas per day was being produced and utilized in the Panhandle gas field of Texas for stripping purposes, the residue gas being blown into the air. That by said operations said gas reserve was rapidly being dissipated and such condition if allowed to continue would in time probably have the effect of prematurely exhausting said gas reservoir. That many hundreds of towns in the

State of Texas and elsewhere in the United States, and many millions of people were and are supplied with natural gas from the Panhandle Gas field of Texas for use as light and fuel for domestic and industrial purposes, and the public at large was and is greatly concerned with the preservation of said huge reserve as a source from which to supply its needs for natural gas for light and fuel purposes. That by the exercise of its police power the State had the right to promulgate any reasonable law which would have the effect of preventing continuation of the practices which were rapidly dissipating and wasting said gas and which at the same time adjusted and protected the rights and equities of those owning producing gas lands in said reservoir. That in the exercise of its police power the Legislature of Texas was the judge of the remedy which should be adopted to prevent a continuation of the practices which it found to be harmful to the public interest, and said H. B. 266 as enacted by the 44th Legislature constitutes a valid and reasonable exercise of such police power in the accomplishment of legitimate purposes.

Wherefore, having answered fully herein, the defendants pray that complainant take nothing by virtue of its suit, and that defendants go hence without day with their costs.

[fol. 71] (Signed) William McCraw, Attorney General of Texas; (Signed) W. J. (Dick) Holt, Assistant Attorney General; (Signed) T. F. Morrow, Assistant Attorney General; (Signed) Wm. C. Davis, Assistant Attorney General; (Signed) Wm. Madden Hill, Assistant Attorney General; (Signed) C. C. Small, Special Counsel; (Signed) Maurice Cheek, Special Counsel, Attorneys for Defendants.

[File endorsement omitted.]

[fol. 72] IN UNITED STATES DISTRICT COURT

No. 539. In Equity.

[Title omitted]

COMPLAINANT'S SUPPLEMENTAL BILL OF COMPLAINT—Filed January 2, 1936

To Said Honorable Court:

Now comes Consolidated Gas Utilities Corporation, a corporation, complainant in the above entitled and numbered cause, and files this its supplemental bill of complaint and replication in reply to the answer of defendants to complainant's bill, as follows:

1

Complainant denies the allegations contained in Section 7 of defendants' answer, wherein they allege that complainant has already produced more gas from its wells than was originally under the leases on which its wells are located; denies that the production of gas is a local matter and that gas does not become an object of commerce until the act of production has ceased, as alleged in Section 10 of defendants' answer; denies that it is beyond the power of the average owner of a producing gas well to procure sufficient money to finance the building of a pipe line to distant markets; and denies that complainant's obligation is to pro-[fol. 73] duce its gas in conformity with the orders of the Commission adopted under purported authority of House Bill 266, as alleged in Section 12 of its answer.

2

Complainant admits that it is required to produce its gas under regulations of the State of Texas made in the proper exercise of its police power; but denies that House Bill 266 and the orders of the Commission purporting to be issued in pursuance thereof constitute a valid exercise of the police power of the State.

3

Complainant denies that it and other pipe line companies similarly situated enjoy a monopoly to their owner-

ship of the sole market of gas for such purposes as alleged in Section 14 of said answer; denies the allegation in Section 15 of said answer that it was the mandatory duty of the Commission to undertake to protect and adjust the correlative rights and opportunities of the various producers of gas, and in attempting to do so to order the total production of gas from all wells restricted to the market demand for such gas whenever the total potential ability of the field is in excess of the daily market demand for such gas; denies that if complainant and other companies similarly situated are permitted to withdraw all their market requirements from their own wells, the owners of other wells would not be able to produce any gas at all from said wells. In this connection complainant avers that all the owners of gas wells in the Panhandle of Texas have the same right and opportunity to develop markets and provide marketing facilities which complainant and those similarly situated had and exercised at the [fol. 74] time they developed their markets and provided themselves with their marketing facilities.

4

Complainant denies the allegations contained in Section 18 to the effect that there is sufficient gas available to complainant in the East Panhandle field to supply its markets without the expenditure of large sums of money and without the building of additional pipe lines; and denies the allegation contained in Section 20 of said answer to the effect that the production of gas is a purely local matter, entirely separated from its transportation in interstate commerce. In this connection complainant shows that the movement of gas is continuous from the bottom of a well through the casing, which is in practical effect a part of the pipe line, on into the pipe line and through pipe lines to its ultimate destination, where it is consumed for light and fuel.

5

Complainant denies the allegation contained in Section 24 of said answer to the effect that the act and orders here under attack, if enforced, will prohibit complainant and those similarly situated from withdrawing a disproportionate amount of gas from the reservoir as compared

with the withdrawals of others, and in this connection avers that the necessary operation and effect of said orders is to cause and not to prevent disproportionate withdrawals of gas from the reservoir, all of which is clearly set out in complainant's bill.

6

Complainant denies the allegation contained in Section 25 of said answer to the effect that said act and orders allocate to each producing well its fair share of the total amount of gas permitted to be withdrawn from the reservoir.

[fol. 75]

7

Complainant denies the allegations contained in Section 27 of defendants' answer purporting to state the provisions of the law in force in the State of Texas at the time Texas Panhandle Gas Company, complainant's predecessor in interest, and complainant obtained their respective permits to do business in the State of Texas. At the time said original permit was issued, House Bill 266 had not been enacted, nor was there in effect in the State of Texas any statute purporting to authorize the Commission to issue rules and regulations that would operate to curtail the production of gas from complainant's wells to that point where it could not supply its market requirements from such wells, and which would require complainant to divide its markets and marketing facilities by requiring it to purchase gas from those who had no interest in its markets and marketing facilities. Complainant stands in no different position under its right to attack House Bill 266 and the orders of the Railroad Commission purported to be promulgated in pursuance thereof by reason of the procurement of a permit to do business in Texas by it and its predecessor in interest.

8

Complainant denies the allegation contained in Section 28 of said answer to the effect that it and other pipe line companies similarly situated constitute a monopoly; and denies the allegations contained therein to the effect that if the provisions of House Bill 266 under attack by complainant cannot be made effective, said law would have the

effect of dedicating all the sweet gas producing portions of said Panhandle field to the uses and benefit of complainant and others similarly situated. In this connection complainant shows that others than complainant and the pipe line [fol. 76] companies similarly situated have the same right to develop their markets and transport their gas to such markets as have complainant and the pipe line companies similarly situated.

9

Complainant admits that the gas reserves in the Panhandle were being rapidly depleted prior to the enactment of House Bill 266, and that many hundreds of towns in the State of Texas and elsewhere and many millions of people were supplied with natural gas from the Panhandle field, as averred in Section 29 of defendants' answer; but complainant denies that in the exercise of its police power the State has the right to promulgate any law or any order which will operate to deprive complainant of its property and its property rights in violation of the various constitutional provisions pleaded in its bill of complaint; denies that the provisions of House Bill 266 which complainant attacks herein operate to prevent waste or have any relation to the prevention of waste; denies that the Legislature of Texas is the judge of the remedy which should be adopted to prevent a continuation of the practices which it found to be harmful to the public interest, unless its judgment prompt it to enact legislation not in violation of complainant's constitutional rights set forth in its bill of complaint. In this connection complainant avers that it was not necessary for the Legislature to undertake to impose upon complainant and those similarly situated the burdens imposed upon them under the operation of House Bill 266, as construed by defendants, and the orders promulgated by the defendant composing the Railroad Commission purporting to act in pursuance of such statute, in order to stop the wasteful production and utilization of gas prevailing at the time said statute was enacted. Complainant admits that the Legislature was entirely within its power and authority in prohibiting the wasteful production and utili- [fol. 77] zation of gas which prevailed in the Panhandle of Texas at the time it enacted House Bill 266; but denies that it had the power and authority to undertake to com-

pensate those guilty of such wasteful practices by taking complainant's markets and marketing facilities and its gas to the extent of enormous quantities and pass same over to those guilty of such wasteful practices.

Wherefore, complainant, prays as in its bill of complaint heretofore filed in this cause.

C. C. Mount, Chas. H. Keffer, Morgan, Culton, Morgan & Britain, Attorneys for Complainant. S. A. L. Morgan, of Counsel.

[File endorsement omitted.]

[fol. 78] In United States District Court for the Western District of Texas, Austin Division

No. 550. In Equity

Texoma Natural Gas Company, a Corporation, Complainant,

vs.

Ernest O. Thompson et al., Defendants

Complainant's Substituted Original Bill—Filed January 2, 1936, as of October 1, 1935

To Said Honorable Court:

I

Now comes Texoma Natural Gas Company, a corporation, hereinafter called complainant, and complains of Ernest O. Thompson, C. V. Terrell and Lon A. Smith, composing the Railroad Commission of Texas, and William McCraw, Attorney General of Texas, hereinafter called defendants, and represents to the Court that complainant is a corporation organized under the laws of the State of Delaware, with a permit to do business in the State of Texas; that complainant is a resident citizen of the State of Delaware, where it has its domicile; that defendants Ernest O. Thompson, C. V. Terrell and Lon A. Smith are the duly elected, qualified and acting members of the Railroad Commission of Texas, an executive or administrative

body organized and existing under the Constitution and laws of the State of Texas; that the defendant William [fol. 79] McCraw is the duly elected, qualified and acting Attorney General of the State of Texas; that said defendants are all resident citizens of the State of Texas and reside in Austin, Travis County, Texas, where each has an office.

II

This Court has jurisdiction of this cause:

(a) Because it is one arising under the Constitution and laws of the United States;

(b) Because there is a diversity of citizenship between the complainant and the defendants as above alleged;

(c) Because the value of the property rights in controversy greatly exceeds the sum of $3,000.00, exclusive of interest and costs, as will more fully appear in the further allegations of this bill; and

(d) Because this cause, in part, is an appeal, provided for by the statutes of the State of Texas, from certain rules, regulations and orders issued by the Railroad Commission of Texas under purported authority of certain statutes of the State of Texas, all of which will more fully appear from the further allegations of this bill, which rules, regulations and orders are null and void, complainant contends, because in violation of certain provisions of the Constitution of the United States and of the Constitution of the State of Texas.

III

For cause of action complainant represents that it is engaged in the business of owning and developing large deposits of sweet natural gas found in the earth and located in the State of Texas in what is known as the Panhandle of Texas, and in capturing and producing such gas and transporting same through its pipe lines in interstate commerce to points outside the State of Texas, as hereinafter more particularly set forth.

[fol. 80] IV

Complainant alleges that prior to 1929 explorations and developments for the production of oil and gas had dis-

closed the existence of vast deposits of dry natural gas, suitable for fuel and light, underlying large areas aggregating more than one million acres of land in the northern portion of what is commonly called the Panhandle of Texas; that the developments down to date have disclosed that the total volume of such gas will be sufficient to serve a population of ten million or more people for a period of fifteen years or more. The portion of Texas in which this deposit of gas lies is sparsely settled, the entire population thereof being not more than 150,000 people, and the only available markets for natural gas in the immediate vicinity of such areas had been supplied prior to the organization of complainant during the year 1930. Sweet gas, which can be used only as fuel for domestic and industrial purposes, for light, and for other limited lawful purposes prescribed by the statutes of the State of Texas, can be profitably marketed only in those large centers of population where great volumes are constantly needed for daily consumption. The only cities or centers of population in Texas of a size affording a market for considerable volumes of gas are hundreds of miles from this area and were already served from other gas reserves or from portions of the Panhandle gas reserves. These facts made it necessary that markets be found outside the State of Texas for the gas owned by complainant.

V

The nearest available potential markets outside the State of Texas in 1929 and thereafter, where a sufficient volume of gas could be used to justify an investment in necessary reserves, developments and facilities, were in what is com- [fol. 81] monly known as the Central West, embracing among others the States of Illinois, Wisconsin, Minnesota, Michigan, Ohio, Kansas and Nebraska, which are at an average distance of approximately 800 miles from the areas producing natural gas in the Panhandle of Texas.

VI

Natural gas cannot be stored like other mineral products, but must be taken directly from the producing wells and delivered through pipe lines to the consumer for immediate use; and in order to arrange for the necessary capital required to purchase and develop the gas reserves and carry

the natural gas to these remote markets, it was found essential (a) to go into these markets and contract in advance for the sale of a sufficient volume of gas to justify the construction of pipe lines and the acquisition of gas acreage and gas reserves; (b) to assure the persons with whom these contracts were made that sufficient reserves of gas had been contracted for by those seeking markets therefor so that there would be at all times a continuous and dependable volume of gas available as needed for continuous use; and (c) to finance and construct the pipe lines extending from the wells located in such gas reserves to these remote markets.

VII

With a view of entering into the business of owning and developing gas reserves in the Panhandle of Texas and transporting the gas therefrom to the markets in the Middle West and marketing same in the centers of population, particularly in the City of Chicago, in the State of Illinois, complainant's owners, about the year 1929, began negotiations looking to that end. Pursuant to such purpose, complainant's owners, beginning about the year 1929, purchased leases conveying a determinable fee title to the natural gas [fol. 82] in numerous tracts of land in the Counties of Hartley, Moore, Carson, Potter Hutchinson, Gray and Wheeler, in the State of Texas, originally embracing about 281,000 acres of land. Some of said leases have been traded or exchanged for other leases; but complainant still owns leases representing substantially the same reserves of gas, as disclosed by a complete list and brief abstract of the leases now owned by complainant, marked Exhibit "A", which is attached hereto and by reference is made a part of this bill. In the purchase of these leases the complainant invested in excess of $13,000,000.00. As a part of the general plan of development of complainant's business, complainant and its owners, during the years 1929, 1930, 1931, and on down to the present time, carried on continuous negotiations with distributors and users of gas in the States of Kansas, Nebraska, Iowa and Illinois for definite contract commitments by which they would take and use this gas if tendered them by complainant in continuous dependable quantities; and, these commitments having been procured and consummated, complainant financed and con-

structed a pipe line from the town of Fritch, in Hutchinson County, Texas, to the north line of the State of Texas, a distance of about 90 miles, and across this line to a point near the town of Gray, Oklahoma, a total distance of approximately 100 miles. At the same time another pipe line company, formerly known as Continental Construction Company but now known as Natural Gas Pipe Line Company of America, organized about the same time as complainant and affiliated with complainant, completed the construction of a trunk pipe line from a point near the town of Gray, Oklahoma, through and across the States of Oklahoma, Kansas, the southeastern corner of Nebraska, and across Iowa and Illinois to a terminus at Joliet, Illinois, near the city of Chicago. This trunk line is directly connected with complainant's line at the point of intersection near said town of Gray, Oklahoma. Natural Gas Pipe Line Company of America has agreed to purchase three-fourths [fol. 83] of its total market requirements from complainant at the point of intersection of said two pipe lines near Gray, Oklahoma; and complainant has agreed to deliver to Natural Gas Pipe Line Company of America at such point of intersection three-fourths of the latter's total requirements. In addition to the pipe line from Fritch, Texas, to Gray, Oklahoma, complainant has constructed other lines along and across the known gas areas, to-wit, a 24 inch pipe line approximately 40 miles in length from said town of Fritich across Hutchinson, Carson and Gray Counties, and a 24 inch pipe line approximately 35 miles in length from said town of Fritch to Dumas, in Moore County, Texas, which have been connected with laterals of 6 inch, 8 inch and 10 inch pipe lines, said lateral lines aggregating about 100 miles, all of which three lines, as well as other shorter lines, complainant constructed for the purpose of connecting its wells with its main pipe line and affording an uninterrupted movement of its gas from its wells to the markets located in the States hereinabove mentioned. All of these lines are shown in detail on the map or sketch marked Exhibit "B" attached hereto; and the main line of Natural Gas Pipe Line of America extending from Gray, Oklahoma, to Joliet, Illinois, is shown on the map marked Exhibit "C" and attached hereto. Both Exhibits

"B" and "C" are by reference here made parts of this bill. In order to facilitate the transportation of gas through its pipe lines, complainant has been required, at great expense, to construct a compressor station and to purchase other equipment incident to the transportation of its gas. The total investment of complainant in its lines, compressor station and other equipment necessary to transport the gas from its wells to the terminus of its pipe line near Gray, [fol. 84] Oklahoma, is in excess of $8,500,000.00. The investment of Natural Gas Pipe Line Company of America in its pipe line, compressor stations and other equipment necessary to continue the transportation of the gas delivered to it by complainant near Gray, Oklahoma, as aforesaid, to Joliet, in the State of Illinois, and to other points to which it transports gas from complainant's wells is in excess of $50,000,000.00.

VIII

Complainant avers that the negotiations leading up to the procuring of market contracts and commitments, which were absolutely essential to this enterprise and without which it would have been impossible, represent more than five years of continuous negotiations with persons and corporations owning and controlling distribution systems in cities, towns and industrial centers remotely situated from the gas producing areas above mentioned. In this connection complainant shows that there are two classes of consumers of natural gas: (a) domestic consumers, that is, those who use gas for fuel in households for house heating, cooking and light; and (b) industrial consumers, such as manufacturers and other persons using fuel for the generation of power. Domestic users are reached only through local distribution systems. Almost every, if not every, city and town to which complainant's gas is now being delivered and will hereafter be delivered had long been served by local distribution systems manufacturing artificial gas. These distributors who were then furnishing artificial gas had large investments in standby and other manufacturing equipment which they used in the manufacture of artificial gas, and which would become obsolete and would have to be junked in the main if the owners discontinued the marketing of artificial gas and entered into the business of distributing natural gas. In order to induce

[fol. 85] these distributors to make these changes, it was necessary to negotiate with them on the basis of an attractive price for natural gas and to assure them, as heretofore alleged, that complainant could furnish them a continuous and dependable supply of natural gas for a long period of years. In this connection complainant required the services of negotiators, engineers and attorneys to negotiate and prepare these contracts and commitments which it was necessary to acquire before complainant could finance its general enterprise and before Natural Gas Pipe Line Company of America could finance its enterprise as above set out. In an effort to build up and increase these markets and commitments, complainant and Natural Gas Pipe Line Company of America have continued to employ negotiators, engineers and attorneys, at great expense and cost. In the negotiation of contracts for industrial uses, which are absolutely necessary to supplement the outlet for gas to be used for domestic purposes in order to provide a sufficient volume of consumption to justify the investments in the facilities required for transporting and marketing natural gas at such remote distances, complainant and those negotiating for it were compelled to take into account the price of competitive fuels then and thereafter available for industrial uses, and likewise it was necessary to assure these industrial users that complainant had available sufficient gas reserves to meet their full requirements, not only continuously but for a long period of time.

IX

As a result of these negotiations complainant and Natural Gas Pipe Line Company of America have entered into various contracts with distributors and users of natural gas along the pipe line of Natural Gas Pipe Line Company of America, and particularly in the City of Chicago, to [fol. 86] whom Natural Gas Pipe Line Company of America has obligated itself to make available and deliver large volumes of natural gas at the terminus of the latter's pipe line at Joliet, Illinois, and complainant and Natural Gas Pipe Line Company of America are bound and obligated to deliver, as required, enormous volumes of natural gas through their said pipe lines above referred to. By such means complainant has found, negotiated and established a definite and fixed market to which it can furnish for long

periods of time the gas necessary to serve the domestic and industrial requirements of those who have contracted and who are in the process of contracting for the purchase of complainant's gas through Natural Gas Pipe Line Company of America, as aforesaid. Such markets and outlets negotiated, acquired and established by complainant and by its affiliated company above named are indispensable to the general enterprise in which complainant is engaged and with which it is connected, as hereinabove set forth, and such markets, together with the reserves of natural gas acquired by complainant and the pipe line constructed by complainant as aforesaid, constitute the essential foundation upon which the whole financial structure of complainant and said affiliated company has been built. These contracts and markets, as well as the leases and pipe lines above mentioned, are the property of complainant and said affiliated company, and have great value to complainant.

X

Complainant's market outlet through Natural Gas Pipe Line Company of America, as aforesaid, is more than 100,000,000 cubic feet of gas daily, and the volume of gas which its present users will require from month to month will steadily increase with the approach of the winter season.

XI

Under the terms of the leases acquired by complainant [fol. 87] as aforesaid it is required to pay rentals averaging about 75¢ an acre annually, or, in the alternative, to develop such leases for the production of gas therefrom by drilling and equipping wells thereon, in the absence of the payment of which rentals or the drilling and equipping of such wells said leases will terminate and complainant will lose its investment therein. In any event, under the law, the title of complainant as lessee will terminate at the end of what is commonly known as the primary term of any given lease, which usually extends from three to ten years from the date of such lease, unless at the expiration of such primary term the lessee shall be actually producing oil or gas from the lease. Complainant avers that for the protection of its large investment in such leases, it and its predecessors in ownership have drilled and caused to be drilled 89 wells on its leases located in the West Panhandle

field or zone. It will be necessary for complainant to drill additional wells on said leases from time to time during the next few years in order to protect itself against their termination at the expiration of their primary term, and for the protection of its own investment in its gas reserves and for the protection of its lessors against drainage of gas from its leases to wells drilled on adjoining lands, numbering in all more than 150 wells, at a total cost to it of more than $3,700,000.00.

Complainant avers that its lines in Texas extending to the terminus at Gray, Oklahoma, as well as the connecting lines of Natural Gas Pipe Line Company of America, were financed and built for the purpose of developing complainant's reserves of natural gas in the Panhandle of Texas and transporting this gas to the remote markets above referred to; that the gas which complainant will deliver from its own reserves in the Panhandle of Texas [fol. 88] to Natural Gas Pipe Line Company of America at Gray, Oklahoma, will fully meet the market outlet which complainant has with that company, and it cannot sell to and through said Natural Gas Pipe Line Company of America more than it can produce without waste from its reserves covered by its leases last mentioned and which it will produce from these leases in the performance of its contractural obligations to the lessors who executed such lease contracts and their successors in interest.

XII

Complainant further avers that the leases comprising complainant's reserves of natural gas above referred to cover numerous tracts of land, all situated over and on one general geological structure extending across the counties above named in the State of Texas; that the gas is found in porous rocks and sands permitting the migration of natural gas in the direction of a producing well upon the release and withdrawal of gas through such well; that in addition to the lands covered by complainant's leases, there are numerous other lands within the area overlying such geological structures, the natural gas under which lands is owned by many different corporations and individuals, some of whom have market outlets at this time and some of whom are producing enormous quantities of gas; that under the laws of Texas, the owner of the sur-

face and those to whom he has sold, leased or assigned the same own the natural gas in place underneath the surface of the land, and such owners have the right to drill wells to the formations bearing such natural gas and capture the same by permitting its withdrawal through such wells. In this connection complainant represents that the drilling of a well into the formation bearing natural gas and the withdrawal of natural gas through such well results in a movement of the gas underneath the surface in the direction of the well as aforesaid. Under the operation [fol. 89] of Texas laws, the only protection complainant as the owner of the natural gas in place has against loss of the natural gas through drainage to the wells of others is to drill wells on its own lands or leases and capture the gas as rapidly as it can be marketed for lawful uses, without the committing of physical waste.

Complainant further avers that in the same geological structure are present porous rocks and sands bearing both crude oil and gas in commercial quantities, which rocks and sands are directly connected with the rocks and sands bearing natural gas only; that there is such communication between the formations bearing gas only and those bearing oil and gas also as that the production of oil through oil wells drilled into the formations of such structure is accompanied by the production and escape of natural gas in enormous quantities; that the production of oil with the attendant production and escape of natural gas soon exhausts the supply of natural gas contained in the formation with the oil, with the result that a low pressure area is formed, and drainage of gas in enormous quantities automatically sets up from the formations bearing natural gas only in the direction of the wells producing oil and natural gas; that more than 2000 wells produce oil from formations in said structure, many of which have been producing oil since the year 1925 and many hundreds of which have been producing oil since the year 1926; that it is estimated by reliable engineers who have conducted an investigation and study of the withdrawals of natural gas from said general reservoir that more than 4,000,000,000,000 cubic feet of natural gas has been withdrawn from the general reservoir during the period of several years ending August 31st, 1935, of which amount approximately [fol. 90] 80% has been withdrawn in connection with the

operation of oil wells; that this enormous withdrawal of gas has resulted in reducing the rock pressure in the oil field areas where numerous wells have been drilled and in other areas where the withdrawal of gas has been excessive; that enormous volumes of gas are being withdrawn from said reservoir each day at the present time; that the enormous production of natural gas that has already occurred and is still occurring has resulted in a material and substantial depletion of the gas contained in the general reservoir and in a great reduction in the reservoir pressure or rock pressure in the areas of heavy withdrawal. A tremendous migration or drainage of natural gas from areas of high pressure to areas of low pressure has resulted from such heavy withdrawals of natural gas in connection with the operation of oil wells and by reason of other heavy withdrawals of gas from such area. Complainant's leases and reserves of natural gas are located in areas of high pressure, which areas are also structurally high in their relation to the other formations in said structure from which oil and natural gas have been produced as aforesaid, and this migration and drainage in the direction of the oil fields and other areas of low pressure resulting from heavy withdrawals of gas as aforesaid has resulted in the depletion of enormous quantities of gas originally underlying the leases and reserves owned by complainant, and complainant's leases are continuously being drained of enormous quantities of gas which is migrating in the direction of such low pressure areas. In this connection complainant shows that the operation of said oil wells and other wells in said low pressure areas will continue to result in the production and waste of enormous quantities of natural gas, and the process of drainage from the formations underlying complainant's leases and re- [fol. 91] serves will continue indefinitely, even though the production of gas in connection with the operation of such wells be materially lessened or discontinued altogether. Complainant represents that the only remedy it has against the loss of its natural gas at present located under the land covered by its leases is its right to develop such leases and produce the gas therefrom as rapidly as market outlets can be procured and before it is withdrawn and depleted through the operation of other gas wells and oil wells producing gas from the same general reservoir.

In this connection complainant represents that under the present law enormous quantities of gas containing sulphur or sulphur compounds, commonly referred to as sour gas, is being produced in areas lying on the north side of said great gas reservoir in the West Panhandle field for use in the manufacture of carbon black; that such sour gas is produced from formations directly connected with the formations producing sweet gas, including the formations underlying complainant's leases; that the volume of sour gas and other gas available for use in the manufacture of carbon black which is now being produced from said general reservoir aggregates almost 400,000,000 cubic feet of gas daily, all of which gas is being produced from limited areas and localities with the result that low pressure areas have been formed and are now being formed, and to which low pressure areas gas is being drained from the areas of high pressure, including the areas in which complainant's leases are located; that the continued production of this enormous quantity of gas for use in the manufacture of carbon black will continue to form increasingly larger areas of low pressure, with the inevitable result that tremendous quantities of gas will be drained from the formations underlying complainant's leases in [fol. 92] the direction of the wells from which such gas now being used in the manufacture of carbon black shall be produced.

XIII

Complainant avers that scattered throughout the area embraced within the geological structure above referred to are numerous tracts of land in addition to those covered by complainant's leases, on many of which tracts of land wells have been drilled and equipped for the producing of natural gas therefrom; that the owners of a considerable number of wells now equipped for the producing of natural gas therefrom are without available markets at this time for the sale of their gas for lawful purposes; that in order to prevent the termination of the leases through failure to develop during the primary term, other gas wells will doubtless be drilled and completed as producers of natural gas on lands scattered throughout the same area, and the owners of these wells may be without available markets for the time being for the natural gas which could be produced from such wells.

The owners of other wells who have no market outlet for the gas produced therefrom had the same opportunity and the same right to make the expenditures and investment of money, time and talent necessary to the building of pipe lines, pipe line outlets, and acquiring of markets for the sale and delivery of their gas as had complainant; but such owners have wholly failed to use the diligence used by complainant and many others for the marketing of their gas, but have contented themselves with demanding that complainant and those who have provided themselves with market outlets and with pipe line transportation facilities divide their markets and pipe line facilities with those who have no such markets or pipe line facilities [fol. 93] through the purchase from such owners of natural gas, which complainant and others similarly situated do not need or require in order to meet their market requirements. If complainant and those similarly situated yield to this demand and purchase gas from others who have no pipe line facilities for handling the gas and no market outlets for disposing of same, they deny themselves the right and opportunity to market the gas to exactly the extent that they purchase gas from others. Complainant is under no obligation to divide its markets and its pipe line facilities with those who have no ownership and investment therein, and any effort to deprive complainant of its right to use its pipe line facilities and its markets for the transportation and sale of its own gas by requiring complainant to purchase gas from others and transport the same through its pipe line facilities and dispose of it in complainant's markets, violates fundamental and valuable property rights of complainant entitling it to produce, transport and sell its own gas in the markets made available by complainant's investments and diligence. In this connection complainant represents that the owners of many of such wells not now connected to gas pipe lines have produced enormous quantities of gas and, after causing a small content of natural gasoline to be processed or stripped therefrom, wasted such gas to the air. In many instances the owners of such wells have produced many times the original content of the leases on which their wells are situated, and have produced in addition to such original content tremendous quantities of gas drained from the lands and leases of others.

In addition to the lands on which wells capable of producing gas have been drilled, lands aggregating several hundred thousand acres, constituting far more than one-half the total area of said Panhandle gas reservoir and more than one-half of the West Panhandle field, are as yet [fol. 94] undeveloped, though the drilling of wells in the vicinity of such lands has clearly proved that same will produce gas when wells shall have been drilled thereon. Of this undeveloped acreage Texoma owns leases aggregating more than 150,000 acres of proven gas leases, which will produce enormous quantities of gas when in the orderly course of development complainant shall find it necessary and proper to drill wells thereon. Such undeveloped lands, including those owned by complainant as aforesaid, are subjected to extensive drainage due to the creation of low pressure areas through the production of natural gas from oil wells and from gas wells which the gas has been used and is being used in the manufacture of carbon black and for other purposes, including the processing or stripping of gas for the extraction of a small gasoline content therefrom and the wastage of the residue to the air.

XIV

Complainant further represents that the total volume of natural gas originally contained in said reservoir aggregated approximately 16,000,000,000,000 cubic feet, of which total volume the formations underlying leases now owned by complainant contained approximately 14%; that of the withdrawals of natural gas from said reservoir down to the present time, aggregating more than 4,000,000,000,000 cubic feet as aforesaid, less than 1% has been taken by complainant. Complainant and those from whom it acquired its leases have therefore suffered drainage to the extent of approximately 670,000,000,000 cubic feet of natural gas down to this date. Based on a field price of 4¢ per thousand cubic feet, the loss by drainage as aforesaid to complainant and those claiming under it aggregates approximately $26,800,000.00. In this connection complainant shows that during the first six months of the present [fol. 95] year the average daily withdrawals of gas from said reservoir aggregated more than 2,000,000,000 cubic feet of gas daily, of which complainant has taken only approximately 5%, notwithstanding it is the owner of ap-

proximately 14% of the total volume of gas contained in said reservoir. Complainant, therefore, during the first six months of this year sustained an average daily loss by drainage to other wells of approximately 240,000,000 cubic feet of gas, which, based on said field price, would have a value of about $9600.00. Complainant is suffering drainage to substantially the same extent at the present time, and it is therefore sustaining financial losses through the drainage from said reservoir at the rate of more than $9600.00 daily, $288,000.00 monthly, and $3,456,000.00 annually. In this connection complainant represents that there is no reasonable probability that it will ever be able to find a market outlet through its pipe line and that of its affiliated company for its full proportion of the gas from said reservoir at the present daily rate of production, and complainant will therefore inevitably sustain enormous losses in money aggregating many millions of dollars through its inability to produce its gas before it is drained away to the areas of low pressure created by the production of oil and natural gas from wells other than complainant's wells.

Even if the production of gas through the operation of oil wells, casinghead gas wells, and other wells producing natural gas located on leases other than complainant's leases should be greatly reduced through further regulation by the Railroad Commission or otherwise, complainant will continue to suffer enormous losses aggregating many hundreds of thousands of dollars annually by reason of the drainage of its gas from formations underlying its leases to the areas of low pressure already created and to [fol. 96] be created by the production of oil and natural gas from wells other than complainant's wells; and complainant's only remedy against such losses is the exercise of its right to develop its leases and produce the natural gas therefrom and transport the same to market as rapidly as market outlets therefor can be procured.

XV

Complainant avers that it sells and delivers its natural gas to Natural Gas Pipe Line Company of America by virtue of a contract between complainant and said company, which contract constitutes valuable property belonging to complainant, and complainant has a right, under

the terms of said contract, to enjoy the fruits and benefits thereof. Said contract was entered into long prior to the enactment of the statute and the promulgation of the order of the Railroad Commission of Texas of which complainant complains in this bill.

XVI

Complainant avers that the 44th Legislature of Texas, at the Regular Session thereof which convened about the 8th day of January, 1935, enacted a statute purporting to regulate the production, transportation and sale of natural gas and to define and prevent the waste of natural gas and to restrict the production of gas to a schedule of production fixed by the Railroad Commission. The statute referred to is known as House Bill 266 and was duly enacted by both houses of the Texas Legislature and approved by the Governor. Said statute covers many features and phases of the production, conservation and transportation of natural gas not material to this bill. The material provisions of such statute are as follows:

"Sec. 10. It shall be the duty of the Commission to prorate and regulate the daily gas well production from each common reservoir in the manner and method herein set forth. The Commission shall prorate and regulate such [fol. 97] production for the protection of public and private interests:

(a) In the prevention of waste as "waste" is defined herein;

(b) In the adjustment of correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas as permitted in this Article.

"Sec. 11. The Commission shall exercise the authority to accomplish the purpose designated under item (a) of Section 10 when the presence or imminence of waste is supported by a finding based upon the evidence introduced at a hearing to be held as herein provided.

The Commission shall exercise the authority to accomplish the purpose designated under item (b) of Section 10 when evidence introduced at a hearing to be held as herein provided will support a finding made by the Commission

that the aggregate lawful volume of the open flow or daily potential capacity to produce of all gas wells located in a common reservoir, is in excess of the daily reasonable market demand for gas from gas wells that may be produced from such common reservoir, to be utilized as permitted in this Article.

"Sec. 12. On or before the twentieth (20) day of each calendar month the Commission shall hold a hearing after notice has been given, as provided by law, for the purpose of determining the aggregate daily capacity to produce of all gas wells in a common reservoir, and as nearly as possible, the daily volume of gas from each common reservoir that will be produced from gas wells during the following month to be utilized as permitted in this Article. Upon such determination, the Commission, based upon evidence introduced at such hearing, shall allocate to each gas well producing gas from such common reservoir a percentage of the daily productive capacity of each well which may be produced daily during the following month from each gas well producing gas from such common reservoir. Such percentage of the daily producing capacity of each well shall be regarded as its daily allowable production of such daily volume required for utilization from such common reservoir. The daily allowable production of each gas well shall be computed and allocated as provided in Sections 13 and 14.

"Sec. 13. In determining the daily allowable production for each gas well the Commission shall take into account the size of the tract segregated with respect to surface position and common ownership upon which such gas well or wells are located; the relation between the daily producing capacity of each gas well and the aggregate daily capacity of all gas wells producing the same kind of gas in the same common reservoir or zone; and all other factors which are pertinent; provided that the Commission shall not take into account the size of the tract upon which any gas well or wells are located in excess of the efficient drainage area of such well or wells, producing at twenty-five [fol. 98] percent (25%) of the daily productive capacity, which drainage area shall be determined by the Commission. In ascertaining the drainage area of a well, the Commission shall take into account such factors as are reflected in the productive capacity of a gas well, including forma-

tion pressure, the permeability and porosity of the producing formation, and the well bore's structural position, together with all other factors taken into account by a reasonably prudent operator in determining the drainage area for a gas well.

"Sec. 14. It shall be the duty of the Commission, after notice and hearing, to ascertain and determine the reasonable market demand for gas from gas wells to be used for light and fuel purposes and for all other lawful purposes to which sweet gas may be put under the terms of this Article and by proper order to restrict the production of gas from all gas wells in said field producing such gas to an amount equal to market demand or to an amount which may be produced without waste as otherwise defined; provided, however, the production of such gas shall in any event be restricted to the amount of the reasonable market demand therefor. In such order the Commission shall allocate, distribute or apportion the total allowable production from such field among the various gas wells affected by the order on a reasonable basis, and as provided in Section 13. It shall likewise be the duty of the Commission to prorate the daily gas well production of sour gas produced from each common reservoir of sour gas in this State. The hearing for such purpose shall be held at the same time as the hearing pertaining to the proration of sweet gas well production. The proration of sour gas well production shall be accomplished according to the manner and method herein provided for the proration of sweet gas well production.

"Sec. 15. Nothing contained in this Article shall require that the production from any gas well with a daily natural open flow of two hundred thousand (200,000) cubic feet of natural gas or more to be restricted to a quantity less than fifty thousand (50,000) cubic feet of natural gas daily; and nothing herein shall require that the production from any gas well with a daily natural open flow of less than two hundred thousand (200,000) cubic feet of gas be reduced to a quantity less than twenty-five percent (25%) of its natural open flow.

In all common reservoirs producing both sweet and sour gas, no gas well shall be permitted to produce in excess of twenty-five percent (25%) of its daily productive capacity; provided the Commission, upon a finding that reservoir

conditions require that such percentage be increased to prevent waste, and that such increase will not create a drainage condition as between sweet and sour gas lands, may authorize an increase in such allowable production. Where the allowable production theretofore allocated to any well is more than fifteen percent (15%) of its daily [fol. 99] producing capacity, and the Commission finds that the production of its daily allowable from such well will cause waste due to the intermingling of sweet and sour gas, the Commission may order the production from such well restricted to fifteen percent (15%) of its daily producing capacity, but this sentence shall not be construed to militate against the right of the Commission to fix the allowable production of any well below fifteen percent (15%) of its daily producing capacity in carrying out the requirements of Sections 13 and 14 of this Act.

"Sec. 16. It shall be unlawful for any person to produce gas from a gas well as herein defined in excess of the daily allowable production in such schedule of allowable production. The rate of production from any gas well shall be deemed to be the average daily rate of production for the month.

"Sec. 17. Where gas is produced from one stratum and oil and gas is produced from another stratum in the same well bore, the Commission shall take into account the amount of gas produced from the oil stratum in determining the amount of gas that may be produced from the stratum producing gas only and may subtract the amount of the casinghead gas produced from the dry gas that would be allocated to said well if it produced dry gas and may restrict the dry gas production accordingly.

"Sec. 18. When unforeseen contingencies increase the demand for gas required by any distributor, transporter or purchaser to an amount in excess of the total allowable production of the wells to which he is connected, such distributor, transporter or purchaser is authorized to increase his take ratably from all such wells in order to supply his demand for gas, provided, however, that notice of such increase and the amount thereof shall be given to the Commission within five (5) days; and provided further that the Commission, at its next hearing, shall adjust the inequality of withdrawals caused by such increase in fixing the allow-

able production of the various wells in the common reservoir or zone.

"Sec. 19. If the Commission finds upon consideration of the evidence introduced at a hearing that either or both of the purposes designated under Section 10 of this Article may be more adequately accomplished by zoning a common reservoir, the Commission shall zone such common reservoir. If the Commission zones such common reservoir, each zone shall be regarded as a separate common reservoir in making allocations of daily allowable production as provided in this Article. The Commission shall allocate to each zone its just proportion of the market demand for gas from the common reservoir, and shall establish appropriate rules and regulations applicable to each zone and shall have the right to adjust its orders to the practicable conditions which exist and to enter any reasonable order which is necessary to effectuate the purpose of this law. The Commission is expressly authorized to segregate a sour [fol. 100] gas area from a sweet gas area and shall not be required to restrict the allowable production of the sour gas zone to the same percentages that may be produced from the sweet gas zone.

"Sec. 20. In the event the Commission finds that the owner of any gas well has failed or refused to utilize or sell the allowable production from his well when such owner has been offered a connection or market for such gas at a reasonable price, such well shall be excluded from consideration in allocating the daily allowable production from the reservoir or zone in which same is located until the owner thereof signifies to the Commission his desire to utilize or sell such gas. In all other cases all gas wells shall be taken into account in allocating the allowable production among wells producing the same type of gas. * * *

"Sec. 23. Any person violating any of the provisions of this Article shall be liable to a penalty not to exceed One Thousand Dollars ($1,000) for each offense, and each day's violation shall be a separate offense. Such penalty may be recovered by the State of Texas with the cost of suit in a civil action instituted in Travis County or in the County where the violation occurred by the Attorney General or by the County or District Attorney when joined by the Attorney General of Texas; and any and all violations or

threatened violations of this Article may be enjoined by any Court of competent jurisdiction in which the suit for penalty may be brought, and in such cases the Court may issue such writs of injunction, mandatory or prohibitory, as the facts justify."

XVII

Following the enactment of said House Bill 226, and purporting to act pursuant thereto, the defendants composing the Railroad Commission of Texas, hereinafter referred to as the Commission, on or about August 28th, 1935, promulgated an order, rule and regulation by it termed "Special Order Fixing Allowable Production of Sweet Natural Gas in the Panhandle District of Texas." A copy of said order, marked Exhibit "D", is attached hereto and by reference is made a part of this bill. At about the same time the defendants composing said Commission caused to be issued and published what they denominated "Gas Proration Schedule for the Month of September, 1935", purporting to allocate to each gas well in the Panhandle gas [fol. 101] field, including the wells of complainant, the quantity of gas which may be produced daily from each well. A copy of that portion of said schedule directly affecting the wells belonging to and operated by complainant as aforesaid, marked Exhibit "E", is attached hereto and by reference made a part of this bill. Said order and schedule will be more particularly referred to in subsequent paragraphs hereof. In said Exhibit "E" the term "Texoma" refers to complainant, and the captions above the successive columns of figures are self-explanatory. In Subdivision C of said order, the defendants composing said Commission made the following statement or finding:

"Physical waste, both underground and overground, is now taking place in each of said fields; and the restriction of production when ratably distributed among the various wells in said fields, capable of producing sweet gas, will prevent physical waste as defined by said House Bill 266; will result in a greater ultimate recovery of gas from each of said fields; will result in a more efficient drainage from said reservoirs by the producing wells; and such restriction is necessary to protect and adjust the correlative rights and

opportunities of the owners of the various wells in said fields capable of producing sweet gas."

Afterwards, on September 25th, 1935, the defendants composing the Commission, purporting to act pursuant to said statute, promulgated an order, rule and regulation by them termed "Special Order Fixing Allowable Production of Sweet and Sour Gas in the Panhandle District of Texas," a copy of which order, marked Exhibit "F", is attached hereto and by reference is made a part of this bill. About the same time said defendants caused to be issued and published what they denominated "Gas Proration Schedules, October, 1935," purporting to allocate to each gas well in the Panhandle gas field, including the wells of complainant, the quantity of gas which may be produced daily from each well during the month of October, 1935. A copy of that [fol. 102] portion of said schedule directly affecting the wells belonging to and operated by complainant as aforesaid, marked Exhibit "G", is attached hereto and by reference made a part of this bill. Said order and schedule will be more particularly referred to in subsequent paragraphs hereof. In said Exhibit "G" the term "Texoma" refers to complainant, and the captions above the successive columns of figures are self-explanatory. In Subdivision E of said order said defendants repeated the statement and findings quoted above. In making such statements and findings just quoted and referred to, said defendants acted wholly without any testimony of probative force, and said findings, on the contrary, are in direct conflict with the overwhelming testimony offered before the Commission at the respective hearings held preliminary to the issuance of said orders and findings. No substantial testimony was introduced at any of said hearings to the effect that the restriction of production, when ratably distributed among the various wells in the fields capable of producing gas, will prevent physical waste as defined in said Act, or will result in a greater ultimate recovery of gas from each of said fields, or will result in a more efficient drainage from said reservoir by the producing wells. Said statements and purported findings do not in fact represent the views and convictions of the defendants composing the Commission, who in truth know that the facts are to the contrary; but were made with the deliberate purpose of trying to bolster up said orders under attack herein. Even measured by the

drastic rule heretofore prescribed by this Court, which complainant asserts is too drastic under the well established rules of procedure governing cases of the character of the case at bar, particularly in the State of Texas, complainant shows that no reasonable man, sitting in the posi-
[fol. 103] tion of the defendants composing the Railroad Commission of Texas, could have reached the conclusion from a fair consideration of the testimony before the Commission that said orders promulgated by the Commission would operate to prevent physical waste, underground or overground, of natural gas in the field from which complainant is producing gas. As a matter of fact, complainant has never committed or caused any character of physical waste in the operation of its wells, nor have those producers of gas who have supplied other pipe lines transporting gas from said Panhandle field to distant markets been guilty of committing or causing any physical waste. Said purported statements and findings are therefore null and void and are entitled to no credence or weight of any kind or character by the Court in considering the issues raised by complainant's bill.

The purported finding by the Commission that the restriction in the production of gas sought to be enforced under the terms of said orders is necessary to protect and adjust the correlative rights and opportunities of the owners of various wells in said fields capable of producing sweet gas is likewise wholly without substantial evidence to support it. No evidence of probative force was introduced at any of the hearings before the Commission in its purported consideration of this subject that would support such purported finding. Complainant has the legal right to acquire and develop its own gas leases, to produce its gas and transport the same through its pipe lines, provided by it as its own cost and expense as herein alleged, and to market such gas in the markets which through the exercise of its foresight, skill and negotiations, and through the expenditure of its money, it has been able to develop, so long as it can produce, transport and market such gas without waste. It has produced its gas in the exercise of the rights
[fol. 104] just stated without committing or causing physical waste. Every other owner of a gas well producing gas from the same reservoir has the same right to acquire leases, drill wells thereon, produce gas, build pipe lines, and

transport such gas through such pipe lines to such markets as he shall develop in the same manner and by the same means as have complainant's markets been developed; and and the exercise by complainant of its rights just stated in no sense violates any correlative right of any other owner of a gas well capable of producing gas from such field. The necessary operation and effect of said orders is not to protect the correlative rights of any owner of a gas well producing from such reservoir, but to divest and deprive complainant of its right to produce its own gas, utilize its own pipe lines for the transportation of such gas, and to market such gas in its own private markets, and to confer upon others, who have made no contribution of any kind or character to the building of complainant's pipe lines or the development of its markets, the privilege, to which they have no right, of sharing complainant's pipe line facilities and dividing complainant's private markets on the same basis as complainant shall be permitted to utilize the same. The necessary operation and effect of said orders and of the statute here under attack is to limit and curtail the production of gas from complainant's wells situated in said field to a small fraction of their potential producing capacity, and to require complainant and others similarly situated to divide their private markets and transportation facilities with others who have no interest in its pipe lines or in its transportation facilities or market contracts developed and owned by it as aforesaid.

In this connection complainant represents that there is no general market for natural gas such as obtains for other [fol. 105] commodities, which markets exist independently of any effort by the producers of such commodities. There is practically no market for gas in the Panhandle gas field, where the population is sparse as aforesaid, and the only markets for the natural gas which can be produced from such field are remotely situated with reference thereto and exist only through and by virtue of private contracts with those who distribute gas for domestic purposes and with industrial consumers, all of which contracts have been negotiated by pipe line companies and their affiliated companies, including complainant and its affiliated company above named, and in the effort through such statute and such orders to limit the production of natural gas from the West Panhandle field to the existing market demand, the

Legislature and the defendants composing the Railroad Commission necessarily purposed and intended to force complainant and others who have acquired such private markets to divide such markets and their transportation facilities provided for transporting their own gas to their respective private markets with others who have no interest therein.

XVIII

In Sections 10 and 11 of said Act, the reference to correlative rights and opportunities of the owners of gas in a common reservoir was necessarily intended by the Legislature to refer to the correlative rights then existing and recognized by the courts of last resort in the State of Texas governing the property rights of the owner of a gas lease and a well producing natural gas, under which the land owner or lease owner may by sinking a well on his land or lease acquire title to all the gas which may be produced therefrom without physical waste, regardless of the fact that it may be drawn from under the lands of adjoining land owners, limited only by the [fol. 106] physical possibility of the adjoining land owner's diminishing the gas under the former's land by the exercise of the same right of capture. Said Act, if valid, is not subject to any other construction than one limiting its operation, in so far as it purports to authorize the Commission to prorate and regulate production of gas in the adjustment of correlative rights and opportunities of the owners of gas in a common reservoir, to those conditions and situations where it is necessary to prorate and regulate production of gas for the protection of such declared correlative rights. By such Act the Legislature did not attempt to change the property right vested in the owner of a gas well to produce and appropriate the gas from such well without regard to its origin, and manifestly intended that such property rights in gas wells should continue in the owners as uniformly declared by the courts of last resort in Texas prior to the enactment of said statute. It was not intended by the Legislature to delegate to or vest in the Commission any power or authority to change or modify the property rights of the owners of gas wells.

If complainant be mistaken in its construction of the statute, and if the Legislature by said Act intended to delegate to and vest in the Commission the power and au-

thority to change the property rights of persons owning gas wells, then said Act, insofar as it purports to delegate to and vest in the Commission such power and authority, is null and void and ineffective to confer any such power or authority upon said Commission for the reasons hereinafter more particularly set forth.

XIX

If the said Act be construed as purporting to authorize the Commission to promulgate and issue such an order as that [fol. 107] issued by it on August 28th, 1935, as aforesaid, complainant shows that the real purpose of the Legislature in enacting such statute, as disclosed by its necessary effect and operation, was to compel complainant and other pipe line companies similarly situated, which like it have developed markets in interstate commerce and constructed pipe lines connecting their wells with such markets, to share these markets and pipe line facilities with individuals and corporations producing gas generally, and to provide transportation facilities and markets for the owners of wells producing natural gas who at this time have no available market by forcing and coercing complainant and those similarly situated to buy gas from such producers, notwithstanding the fact that complainant and others similarly situated have no need for such additional gas in order to fulfill their market contracts, and cannot purchase and use this gas from other producers without great inconvenience and serious losses as hereinafter set forth. In this connection complainant shows that it and other pipe line companies similarly situated are the only persons, firms, or corporations now in position to take and transport to market, for purposes recognized as legal and legitimate under the law, gas from wells drilled into the gas bearing sands of said reservoir, and in purporting to require through the enactment and enforcement of such statute that no more natural gas be produced from said reservoir than the existing market demand, and to require that such gas be taken ratably from all wells producing or capable of producing gas from such reservoir, the Legislature intended, as shown by the necessary operation and effect of such statute, to prevent complainant and those similarly situated from supplying their own market requirements from gas produced from their own wells and to force them to make up

[fol. 108] substantial portions of their market requirements through the purchase of gas from those not having at this time an available market for their natural gas or available facilities for transporting same to market. Under the facts and circumstances herein stated, complainant is not affected with a public interest in the sense that would entitle the State to coerce and force it to place its pipe line and gathering system and its markets at the service and disposal of other persons, who have contributed nothing to the cost and construction of such pipe line and gathering system or to the procuring of such markets. The Legislature is wholly without authority, directly or indirectly, to compel complainant to purchase from other producers gas that it does not want, does not need, and cannot use without interfering with its own markets, which it has procured and provided as an outlet for its own gas, thereby requiring it to share its markets and market contracts and its transportation facilities with the public, and interfering with the orderly development of its leases, as hereinabove more particularly set out. Notwithstanding such want of power and authority on the part of the State or the Legislature, the Commission has announced a purpose to enforce the aforesaid statute as construed by it and to enforce the order and schedules promulgated by it as aforesaid, and is thereby attempting to require complainant and others similarly situated to divide its pipe line facilities and markets with others who have made no contribution to the construction and development thereof.

XX

As applied to complainant, said order operates to prohibit complainant's producing in excess of 80,049,000 cubic feet of natural gas daily, notwithstanding it has a market for approximately 127,000,000 cubic feet of gas daily. The [fol. 109] volume of gas which complainant would be permitted to produce under the operation of said order is less than 2% of the potential producing capacity of its wells, and, if enforced, the operation of said order would allow complainant to produce 46,951,000 cubic feet of gas less than its present market outlet. Complainant would have no means of supplying its present market outlet except to go out and purchase gas from the owners of other wells. The supplying of the additional gas necessary to make up

its market requirements would require the building of additional pipe lines and gathering systems to the wells of other persons and the installing of meters at each of the wells connected, at a tremendous cost aggregating ultimately several million dollars. Many of the wells to which connections would have to be made in order to supply complainant's market requirements under the schedule of allowables fixed by the Commission are connected to natural gasoline plants under contracts rendering the gas from such wells not available for purchase by complainant. Complainant could not depend upon the gas from such wells as a reserve and supply for the users of natural gas who are dependent upon complainant for their supply of natural gas for use in their homes and industries. If placed in a position where it can produce from its own wells a volume of gas much less than its total market requirements, complainant will be subjected to the hazard of sustaining enormous financial losses and of being forced to breach its contracts with those who are purchasing gas from it and from its affiliated company, with the inevitable result that it will in all probability lose a large portion of its market outlet, thus sustaining tremendous irreparable losses and damages.

XXI

Applied to complainant and complainant's properties, the statute enacted by the 44th Legislature as aforesaid and [fol. 110] the orders promulgated by the defendants composing the Commission thereunder are each and all unconstitutional and void in that they necessarily operate to take complainant's property and property rights without due process of law, and to deny complainant the equal protection of the laws, in violation of the Fourteenth Amendment to the Constitution of the United States and of Sections 16, 17 and 19, of Article I, of the Constitution of Texas, and to deprive complainant of its liberty and its property in violation of the impairment of contracts clause of Section 10, Article I, of the Constitution of the United States, and of the sections above named of the Constitution of the State of Texas, and in that they operate to take, damage and destroy complainant's property for a purported public use and apply same to a purported public use without adequate compensation being made and without complainant's consent, in violation of Section 17, Article I, of the Constitution of Texas, in this:

(a) The necessary operation of said act and said orders as applied to complainant is to prevent complainant from taking its gas from the rocks and sands underlying its leases, and to deprive complainant of its property rights in such gas and in the use and disposition of same.

(b) Under the necessary operation of said Act and said orders, complainant will of necessity be deprived of its right to supply with its own gas that part of its market outlets which it would supply with gas purchased from others under the operation of said Act and such orders, with a total net loss to it of the same volume of natural gas that it shall be forced to purchase under the necessary operation and effect of such Act and such orders through drainage to the wells of others situated in low pressure areas in proximity to complainant's leases.

[fol. 111] (c) The operation and effect of such Act and such orders will prevent no physical waste and will have no relation to the prevention of waste; but such Act was designed by the Legislature and such orders were designed and promulgated by the Commission for the purpose of coercing complainant to buy the gas of others not interested in its leases, its transportation facilities, or its market outlets, thus making complainant's right to produce, transport and market its own gas dependent upon the ability of others owning gas wells to do likewise, and thereby taking complainant's property and property rights and depriving complainant of its property and property rights in the gas from its own wells.

(d) As above alleged, complainant and its affiliated company have expended large sums of money through the employment of negotiating agents, engineers and attorneys and through the expenditure of time by their own officers and regular employees in negotiating and developing their markets; and complainant is compelled, by reason of competition with other fuel and other gas companies, to put up a ceaseless and strenuous fight, at great cost to it, to retain its markets against the competition of those engaged in the production, transportation and sale of other fuels and of natural gas. While the markets thus procured are not now adequate and sufficient to enable complainant to sell its proportion of the current daily withdrawal of natural gas from said reservoir, it has by the expenditure of money

and time and by its persistence and skill in negotiating with those interested in the purchase of natural gas, procured markets for substantial volumes of gas as aforesaid, and its right to fulfill its market contracts with its own gas produced from its own reserves and to gather and transport its gas through its pipe line system is a valuable right. The necessary operation and effect of said orders is to de- [fol. 112] prive complainant of the full benefit of said markets and market contracts, and to confiscate a substantial portion of its interest in said markets and market contracts, and to require complainany to set aside and deliver to others substantial interests in such markets and market contracts, thus depriving complainant of its property and property rights in said markets and market contracts.

(e) The necessary effect and operation of said Act and such orders is to deprive complainant and its affiliated company of its right to the full use of complainant's gathering system, pipe line equipment, and said affiliated company's pipe line and equipment acquired for use in connection with complainant's operations and the operations of said affiliated company, and to confiscate and appropriate a valuable and substantial interest in this right by requiring complainant and its said affiliated company to place at the disposal of others, who have no interest in said pipe lines or equipment or any part of same, their transportation facilities afforded by said pipe line, gathering system and equipment for the transportation of natural gas belonging to others to the markets developed by complainant and its said affiliated company.

(f) The State has no such interest in protecting the claimed correlative rights of private owners in a common source of supply of natural gas as authorizes or empowers the Legislature or the Commission thus to take complainant's property without due process of law, or to take, damage and destroy complainant's property for a purported public use (complainant says that the interest served by said Act and such orders are not public, but entirely private) and apply same to such purported public use without adequate compensation being made and without complainant's consent, which consent complainant has not given. The right [fol. 113] and power of the State or a tribunal of the State

to protect the correlative rights of private owners in a common source of supply of natural gas, if any such right as that claimed by the Commission exists, must inevitably cease at that point where such correlative rights cannot be protected except by taking the private property of complainant without due process of law, and by taking, damaging and destroying complainant's gas and its other valuable property and property rights as hereinabove pointed out for a purported public use and applying same to such purported public use, however desirable from the standpoint of the State and the public.

(g) Without regard to the conscious purposes and motives of the members of the Legislature which enacted the legislation here under attack and the defendants composing the Railroad Commission in the promulgation of such order, the necessary operation of such Act and such order clearly demonstrates that in the enactment of such legislation the Legislature, and in the promulgation of such order the defendants composing the Railroad Commission, with an eye not single to the prevention of waste or to the serving of any lawful purpose from the standpoint of the public, but with the dominating purpose of serving the needs and interests of private producers by arbitrarily curtailing the right of complainant to produce gas from its own wells to the extent of its market outlet, were attempting, and the defendants composing the Railroad Commission are now attempting, to serve the needs and minister to the financial and economic difficulties of private persons, to-wit, those who own wells capable of producing gas from the same common reservoir, for which they have provided no present market outlet. Even if the public interest or public welfare be served through the operation and effect of [fol. 114] said Act and such orders, which complainant denies, such result is only an incidental and minor result and not the dominating and important effect of said Act and such orders in their practical operation, and said Act and orders transcend public necessity and are arbitrary and unreasonable.

(h) Under the laws of the State of Texas the uses for which natural gas may be produced from wells producing natural gas only are limited, and as so limited, declared to be non-wasteful. Natural gas from wells producing gas

only cannot be produced and stored, and hence, in the very nature of things, can be lawfully produced only as used or marketed. There can, therefore, be no such thing as the lawful production of gas in excess of market demand and lawful use. There is no market for natural gas produced from said reservoir in which complainant's gas is contained save and except such private markets as each producer has provided for such producer's gas, after the expenditure of large sums of money in acquiring sufficient gas reserves, constructing pipe lines, gathering systems, and other marketing facilities, and in procuring private market contracts. Said Act purports to authorize said Railroad Commission to apportion such private markets among all producers, without regard to whether a particular producer has contributed to the development of such markets, and its necessary operation and effect is to direct the said Commmission to take some producers a part of their private market and apportion the same to other producers, a perfectly futile act for the obvious reason that one producer can make no use of the private market of another producer in the absence of some agreement between them. In the light of such futility, such Act is clearly confiscatory, arbitrary and unreasonable, because it deprives the producer whose market is in part so apportioned to another of valuable property [fol. 115] and property rights which he is justly and equitably and lawfully entitled to enjoy.

(i) The Act and orders under attack necessarily impose upon complainant the enormous expenditure which complainant will have to incur in building pipe lines and pipe line connections necessary to connect its pipe line with the wells nearest its pipe line in order to provide it with gas necessary to meet its market requirements, as set forth in this bill, which expenditures are wholly unnecessary in view of the fact that complainant has more than an adequate supply of natural gas of its own to meet all its market requirements.

(j) The total volume of gas contained in the general reservoir from which complainant's wells are capable of producing gas is being rapidly depleted of its contents of natural gas through the withdrawal of gas in connection with the operation of the more than 2000 oil wells and hundreds of gas wells producing gas from said geological struc-

ture, as hereinabove set forth. Complainant's only protection against such drainage and such depletion and loss to it is to drill gas wells on its leases and produce the gas therefrom as its markets are developed, and this it has an absolute right to do under the laws of Texas. Under the necessary operation of said Act and such order, it will of necessity be deprived of the right to supply with its own gas that part of its market outlet which it shall supply with gas purchased from others, with a total net loss to it of the same volume of natural gas that it shall be forced to purchase under the necessary operation and effect of said Act and such orders.

XXII

Said Act and such orders are unconstitutional and void as against complainant in that they are violative of the [fol. 116] commerce clause of Section 8, Article I, of the Constitution of the United States, because they interfere with and unreasonably burden interstate commerce, in this:

All the natural gas belonging to complaint and held in its reserves affected by said Act and such orders has been sold in interstate commerce under contract with said Natural Gas Pipe Line Company of America, and those with whom the latter has made contracts and commitments, under the terms of which contracts and commitments complainant is required to furnish and deliver gas from its reserves up to the requirements of Natural Gas Pipe Line Company of America, as hereinabove set out. The natural gas from reserves of complainant has been sold and will be sold for delivery in one continuous movement from the bottom of complainant's wells through the well casing and pipe line to Gray, Oklahoma, a point outside the State of Texas, directly into the pipe lines of Natural Gas Pipe Line Company of America for immediate and continuous movement through the latter's pipe lines to points outside the State of Texas, for delivery in turn to the distributors and users of natural gas to whom it has agreed to sell and deliver the same as aforesaid. The contract between complainant and Natural Gas Pipe Line Company of America and the contracts involving the delivery of complainant's gas by said Pipe Line Company to those to whom it has made commitments and contracts for delivery of natural gas as aforesaid were and are transactions in interstate commerce, and

the sale and delivery of complainant's gas through its well casing and pipe lines to Natural Gas Pipe Line Company of America, at Gray, Oklahoma, for immediate and continuous moving through the latter's pipe lines to markets provided and arranged in States outside the State of Texas, as aforesaid, constitute transactions in interstate commerce. [fol. 117] The enforcement of said Act and such orders will delay, hinder and prevent the movement in interstate commerce of the gas from the reserves of complainant through its pipe lines to Gray, Oklahoma, and through the pipe lines of Natural Gas Pipe Line Company of America to Joliet, Illinois, and other points outside the State of Texas. The delay, loss and injury incident to the enforcement of said Act and such orders constitutes an unlawful interference with transactions in interstate commerce, and places on the movement in interstate commerce of complainant's gas an unreasonable and unlawful burden.

XXIII

The Railroad Commission of Texas is an executive body created under the Constitution and laws of the State of Texas, and its members are executive officers of the State of Texas, who have been clothed with administrative powers of a non-judicial character. Section 1, Article II, of the Constitution of Texas, reads as follows:

"The powers of government of the State of Texas shall be divided into three distinct departments, each of which shall be confined to a separate body of magistracy, to-wit: Those which are legislative to one; those which are executive to another; and those which are judicial to another; and no person or collection of persons being of one of these departments shall exercise any power properly attached to either of the others, except in the instances herein expressly permitted."

Section 1, Article V, of the Constitution of Texas reads as follows:

"The judicial power of this State shall be vested in one Supreme Court, in Courts of Civil Appeals, in a Court of Criminal Appeals, in District Courts, in County Courts, in Commissioner Courts, in Courts of Justices of the Peace, and in such other courts as may be provided by law."

Complainant shows that there is no provision in the Constitution of Texas whereby the Railroad Commission of [fol. 118] Texas, an executive board, and the members thereof, who are executive officers of the State, may exercise any character of judicial or legislative function. In this connection complainant show that the only power and authority conferred on the Railroad Commission by the Constitution of Texas are executive in character and not legislative or judicial, and the Legislature of Texas is without authority to confer upon the Railroad Commission any judicial function or legislative power. Said Act defining the duties of the Railroad Commission in connection with its enforcement purports to confer upon the Railroad Commission power and authority both legislative and judicial in character; and the defendants composing the Railroad Commission, in the promulgation of the orders of which complaint is made in this bill, seek to exercise powers which are in some aspects thereof purely judicial and in other aspects purely legislative, in this:

(a) The Railroad Commission is directed by such Act to inquire into the production and reasonable market demand therefor, and to determine the allowable production from such common source of supply, which shall be the reasonable market demand which can be produced without waste. Such provision of said Act is an attempt by the Legislature to confer upon the Railroad Commission legislative power to ascertain the reasonable market demand, which necessarily involves consideration of price, and to determine the allowable production from the common source of supply without prescribing the standard by which the market demand and the allowable production shall be determined, which power the Legislature is without authority to delegate to the Railroad Commission.

(b) Said Act requires the Railroad Commission to allocate, distribute and apportion the allowable production from the common source of supply among the various pro- [fol. 119] ducers on a reasonable basis, and to limit the production of each producer to the amount allocated or apportioned to such producer. Said Act also provides for a hearing, after due notice, at which hearing evidence shall be heard upon which it shall base such allocation, distribution or apportionment. By such provision the Legislature

purported to confer on the Railroad Commission functions that are purely judicial, in that the allocation, distribution or apportionment of the production from the common source of supply, common pool, or portion thereof, among the producers upon a reasonable basis necessarily involves an examination into the legal rights and the extent of the property rights of each producer in the common source of supply, common pool, or portion thereof, which examinations are of a purely judicial character.

(c) Said Act, particularly Section 10 thereof, directs the Railroad Commission to prorate and regulate production of natural gas for the protection of public and private interests in the prevention of waste, as waste is defined in the Act, and in the adjustment of correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas as permitted in the Act. Nowhere in said Act is the term "correlative rights and opportunities" defined, and nowhere in said Act is any standard set up by which the Railroad Commission is to ascertain the correlative rights and opportunities of the owners of natural gas in a common reservoir to produce and use such gas. This requirement, in the light of the context of the Act, places in the Railroad Commission the full power and authority to determine and declare what are the correlative rights and opportunities of the owners of gas in a common reservoir to produce, use and sell the same. If said Act operates as an attempt by the Legislature to modify or [fol. 120] change the property rights of the owner in a gas well as declared by the courts of last resort of the State of Texas, as hereinabove set forth, then the term "correlative rights and opportunities" has no such definite, fixed and known meaning as to be a matter of common knowledge, and in any effort to carry out such requirement of said Act the Railroad Commission would necessarily have to determine and define the correlative rights and opportunities of such owners of gas wells in a common reservoir, which is a legislative function, and attempt to adjust such correlative rights and opportunities after having determined same, which is a judicial function. Such provisions of the Act are for the reasons stated null and void.

(d) Such orders of the Railroad Commission, insofar as they purport to fix and establish the allowable production.

and the reasonable market demand therefor, constitute an effort on the part of the Railroad Commission illegally to exercise legislative power which the Legislature was without authority to delegate to the Railroad Commission, and same is therefore void and unenforcible as to complainant.

(e) Such orders, insofar as they support to allocate, distribute and apportion the allowable production from the common source of supply among the various producers on a so-called reasonable basis, and insofar as they undertake to limit the production of each producer to the amount allocated to such producer, are void and unenforcible as against complainant for the reason that they constitute an effort on the part of said Commission to exercise functions purely judicial in character, in violation of the constitutional provisions above referred to.

(f) The orders hereinabove referred to, insofar as they purport to determine and declare the correlative rights [fol. 121] and opportunities of each owner of gas in a common reservoir to produce gas and sell such gas as permitted under the terms of the article, are void and unenforcible as against complainant for the reason that they constitute an effort on the part of said Commission to exercise functions purely legislative in character, in violation of the constitutional provisions above referred to.

(g) Such orders, insofar as they purport to adjust such correlative rights and opportunities of owners of gas in a common reservoir to produce, use and sell such gas as permitted under the terms of the Act, are void and unenforcible as against complainant for the reason that they constitute an effort on the part of the Commission to exercise functions purely judicial in character, in violation of the constitutional provisions above referred to.

XXIV

Said Act and such orders are unconstitutional and void as against complainant in that they operate to take complainant's property and deprive complainant of its liberty and its property as hereinabove set forth, in violation of the due process of law clause of the Fourteenth Amendment to the Constitution of the United States, and in violation of

Sections 16, 17 and 19, Article I, of the Constitution of Texas, and in that they operate to take, damage and destroy complainant's property for a purported public use and apply same to a purported public use, without adequate compensation being made and without complainant's consent, in violation of Section 17, Article I, of the Constitution of Texas, in this:

Said Act is fatally indefinite and uncertain in meaning insofar as it directs the Railroad Commission to inquire into the production and reasonable market demand therefor, [fol. 122] and to determine the allowable production from such source of supply, which shall be the reasonable market demand which can be produced without waste. The term "market demand" has no well-defined meaning. It involves considerations of price, accessibility to markets, quality and suitability for commercial use of the gas from particular wells, and an infinite number of considerations which the Railroad Commission is not authorized or directed by said Act to consider in arriving at the so-called market demand. The demand for natural gas is subject to great change and fluctuation, increasing when the weather is cold and decreasing when the weather is warm. It is impossible for the Railroad Commission in advance to anticipate what volume of natural gas would constitute the market demand on any given date or over any given period. Any volume of gas which the Railroad Commission might determine to be the market demand for any given time or over any given period could not possibly be more than a mere guess, and complainant cannot be required to conform its conduct in the use of its property each day to a mathematical standard supplied by an agency such as the Commission and based upon a mere guess.

(b) Said act is fatally indefinite and uncertain in meaning insofar as it directs the Railroad Commission to allocate, distribute and apportion the allowable production from the common source of supply among the various producers on a reasonable basis, and to limit the production of each producer to the amount allocated or apportioned to such producer. The term "reasonable basis" is a vague and uncertain term which has no well-defined meaning as applied to the curtailment of the production of natural gas from complainant's wells. The right of complainant to produce its gas involves a consideration of the volume of gas

owned by it in the common reservoir, which of necessity re-
[fol. 123] quires that due consideration be given to the size of the lease on which any given well is located, the position of such lease on the general geological structure, the reservoir pressure at the particular well on such lease, and other factors which the Railroad Commission is not directed or required to consider. In allocating, distributing or apportioning the allowable production from the common source of supply among the various producers on a reasonable basis, the Railroad Commission is given no standard upon which to arrive at such reasonable basis, and is not directed to consider the factors and the elements which are proper or to disregard considerations which are improper, but is left to act upon its own discretion without any standard of conduct prescribed by the Legislature in arriving at such so-called reasonable basis. Complainant cannot be required to conform its conduct in the use of its property each day to a standard or basis supplied by the Railroad Commission arbitrarily and without reference to any statutory guide or standard prescribed by the Legislature.

(c) Said Act, and particularly the introductory paragraph and Subdivision B of Section 10 thereof, is fatally indefinite and uncertain in meaning insofar as it directs the Railroad Commission to prorate and regulate the production of natural gas from each common reservoir in the State for the protection of public and private interests, and to adjust the correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas as is permitted to be produced under the terms of the Act. The terms "public and private interests" and "correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell gas" are vague and uncertain and have no well-defined meaning as applied to the curtailment of production of natural gas from complainant's wells, and the Commission is given no [fol. 124] standard by which to determine the public and private interest it is directed to protect, or to determine the nature, character and extent of the correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas, but is necessarily required, in undertaking the performance of such directions, to indulge in speculation and mere guessing at the

character of the public and private interests it is directed to protect and the nature, character and extent of the correlative rights and opportunities it is directed to adjust under the terms of said Act.

(d) Said Act, and particularly Section 20 thereof, is arbitrary, unreasonable and confiscatory in that the practical operation thereof is to restrict the production of natural gas from the common reservoir from which complainant's wells are producing natural gas to a quantity less than the actual market outlet therefor, unless and until complainant and others desiring to produce gas and market the same through the facilities which they have provided for such purposes shall first offer to the owner of every gas well in the field a price which the Railroad Commission shall thereafter ascertain to be reasonable, without regard to the availability of such gas to complainant's pipe lines or to the pipe lines of others similarly situated, or to the desire or willingness of such owner to sell gas from such well to complainant or others similarly situated.

(e) Said Act, and particularly Section 20 thereof, is unreasonable, arbitrary and confiscatory of the rights, liberty and property of complainant in that it, by indirection, seeks to confer upon the Railroad Commission the right to fix prices, which the Legislature itself is without power and [fol. 125] authority to do, thus depriving complainant and those similarly situated of their constitutional right to bargain and contact with those from whom they might desire to purchase gas at arm's length and upon such terms as might be agreeable to both parties.

(f) The orders of the Railroad Commission here under attack were based largely, if not entirely, upon the statutory provisions referred to in Paragraphs (a), (b), (c), (d) and (e) of this section of complainant's bill, and for the same reasons assigned as establishing the nullity of such statutory provisions, such orders are void and unenforcible as against complainant insofar as they undertake or purport to effectuate such unconstitutional statutory provisions.

XXV

The effect of said Act, if valid, would be to divest complainant of its title and ownership of such natural gas in

place and to destroy complainant's property right in such gas entitling it to produce the same and market the same as rapidly as it could be marketed for lawful purposes and uses without waste, and to give it in lieu thereof some indeterminate interest in a common pool or general reservoir, with the right to produce only under license from the State of Texas, through the Railroad Commission, from such common pool or general reservoir, and making that right contingent in practical effect upon complainant's dividing its markets and marketing facilities with those who have provided themselves with no markets or markets facilities, or those who have provided themselves with markets and market facilities for a less proportion of their potential production than has complainant, and for that reason said Act is invalid because in violation of complainant's rights in its property and its liberty of contract under the due process clause and freedom of contract clause of the Four- [fol. 126] teenth Amendment to the Constitution of the United States.

XXVI

That portion of Section 13 of said Act which requires that the Commission shall not take into account the size of the tract upon which any gas well or wells are located in excess of the efficient drainage area of such well or wells, producing at 25% of the daily productive capacity, and that portion of Section F of the order dated September 25th, 1935, purporting to fix the efficient drainage area of wells located in the West Panhandle field under present conditions at 640 acres, are manifestly unreasonable, arbitrary and confiscatory as applied to complainant in this: complainant has many leases situated within the known limits of said common reservoir capable of producing enormous quantities of natural gas which contain more than 640 acres to each well drilled thereon. Some of said leases have never been developed; but such leases, aggregating more than 150,000 acres of proven gas producing area, constitute a part of complainant's reserves of natural gas and were acquired by it at enormous cost, as hereinabove set forth. Such undeveloped and partially developed leases are being constantly depleted of their gas through drainage to wells located in the many low pressure areas, which have resulted from heavy withdrawals of gas in portions of the common reservoir as hereinabove set forth. The necessary opera-

tion and effect of those portions of said Act and said order above referred to give no consideration to the ownership of such reserves by complainant and afford no protection against the drainage which has been occurring, is occurring, and will continue to occur for an indefinite period, as hereinabove alleged, but force complainant to submit to such drainage and the attendant losses incident thereto or [fol. 127] to drill numerous wells on said undeveloped reserves at tremendous cost to it, all of which wells are unnecessary at this time in order to supply its market requirements for natural gas. Such provisions of the Act and order likewise enable and permit the owners of wells already drilled, many of which wells are located on small tracts ranging as low as 5 acres or less, to produce and market enormous quantities of gas not originally underlying their leases but underlying the undeveloped or partially developed leases of complainant and others similarly situated, without enabling complainant and those similarly situated to increase the production from their own wells to protect themselves against such drainage. For the reasons stated in this paragraph, such provisions of said Act and order inevitably operate to take complainant's property without due process of law and deprive it of its property without compensation and without its consent, in violation of the due process of law clause of the Fourteenth Amendment to the Constitution of the United States and the other constitutional provisions hereinabove expressly pleaded.

XXVII

Complainant's further represents that even if said Act is valid and constitutional, and even if under the provisions thereof the Railroad Commission of Texas has the authority to fix the allowable production from the common reservoir wherein complainant's gas is contained and to apportion such allowable production among producers from such reservoir, nevertheless it is required by the express provisions of said Act that such apportionment shall be made on a reasonable basis. The apportionment of the allowable production from said reservoir made and effected by said orders is grossly unreasonable, arbitrary and confiscatory as to this complainant in that (a) said order limits the produc- [fol. 128] tion by this complainant from its gas reserves to a quantity of gas insufficient to enable this complainant to

supply its existing markets from its gas reserves, notwithstanding its ability to supply its existing markets from its gas reserves without waste; (b) said orders permit the production of a part of the allowable production by others without markets or market facilities who can make no use of such part apportioned to them unless complainant or others similarly situated, who have been likewise deprived of part of their markets, shall divide their markets and market facilities with them; and (c) the effect of such orders is either to restrict the actual production to less than the allowable, that is to say, to less than the Commission has found to be the market demand which can be produced without waste, or to require complainant and other similarly situated and affected to purchase the gas produced by those to whom production has been apportioned, but who are without market and market facilities. It thus results that complainant is by such apportionment deprived of a part of its markets for its own gas which have been provided by it at great expense, without compensation to it and without its consent, and such part of its markets of which it is so deprived, or at least the opportunity to enjoy the same resulting from complainant's deprivation thereof and the probable necessity to which complainant is subjected of purchasing gas from others to supply its markets, is conferred upon others who have contributed nothing to the creation or maintenance thereof. Said orders, having such results, are so clearly confiscatory, arbitrary and unreasonable that they are violative of the due process and equal protection clauses of Section 1 of the Fourteenth Amendment to the Constitution of the United States, and of Sections 16, 17 and 19, of Article I, of the Constitution of the State of Texas.

[fol. 129] XXVIII

In paragraph 2 of Subdivision F of said order dated September 25, 1935, the Commission purports to find that the efficient drainage area of a gas well located in the West Panhandle field, in which complainant's wells are located, is 640 acres. Such finding is unjust and confiscatory as applied to complainant for the reason that many of the complainant's wells are located on tracts of land greatly in excess of 640 acres, and such wells are capable of producing and draining all the gas from the formations underlying

substantially larger areas than 640 acres, and to limit the weight to be given the acreage factor in fixing the allocation to complainant's wells to 640 acres for each well is to subject complainant to heavy drainage through the fact that many wells have been drilled on smaller tracts, ranging down to tracts as small as 20 acres, and the allocations assigned to such wells by the Commission would entitle the owners of such wells located on smaller tracts to produce at a rate greatly in excess of the rate at which complainant can produce its gas, with the inevitable result that if such order be enforced, complainant's right to produce will be restricted and limited until the owners of such wells on smaller tracts will soon have produced all the gas underlying their respective leases and from that time hence the latter will produce enormous quantities of gas which have been drained from the formations underlying complainant's leases, and such gas will be forever lost to complainant, which will be thus deprived as such gas and its property right therein without due process of law, in violation of the constitutional provisions above pleaded.

XXIX

That portion of said order last mentioned whereby the daily allowable for individual wells in the West Panhandle [fol. 130] field shall be determined by dividing the allowable for the field into two equal parts and that 50% of this allowable be distributed to each well in proportion to the relative producing ability of those individual wells, and only 50% of the allowable shall be based on the number of acres containing each of these wells, in no case to exceed 640 acres to any one well for the purpose of proration, is manifestly unjust and confiscatory as applied to complainant in this: the allocation of 50% of the allowable to the relative producing ability of individual wells will result in the drainage of large quantities of gas from formations underlying complainant's leases, for the reason that many of complainant's leases are located on large tracts of land, greater in extent in many instances than 640 acres. Many wells in the vicinity of these large leases of complainant are located on smaller tracts ranging from 320 acres down to 20 acres. The basis of allocation provided for under that portion of said order just referred to will permit the owner of wells on these smaller tracts in the vicinity of complain-

ant's large leases to produce more than 50% as much gas from one of these smaller tracts of from 20 acres to 320 acres as complainant shall be permitted to produce from its larger tracts ranging from 640 acres to as much as 2000 acres. The inevitable result will be that the owners of wells on these smaller tracts will soon exhaust the total quantity of gas originally contained in the formations underlying their tracts of land and thereafter will produce from their wells gas originally contained in the formations underlying complainant's lands, and complainant will thus lose enormous quantities of gas through drainage to such smaller wells, because through the operation of such order it will not have the right to protect itself against such drainage by producing its wells to the extent that it would [fol. 131] be able to produce and market its gas without waste. This will result in a taking of complainant's property without due process of law, in violation of the Fourteenth Amendment to the Constitution of the United States and the other constitutional provisions above specially pleaded.

XXX

That portion of said last mentioned order whereby the daily allowable of gas production for the West Panhandle field is fixed at 380,000,000 cubic feet of gas per day, computed at a pressure base as set forth in said order, is void in that it is unreasonable and arbitrary and does not reflect the evidence before the Commission as to the actual market outlet for natural gas in the West Panhandle field for light and fuel purposes. As a matter of fact, the combined markets of those producing gas from the West Panhandle field, of which the Commission had notice and information at the time such order was entered, aggregate more than 440,000,000 cubic feet of gas for the month of October, 1935; but the Commission, without basis in fact, arbitrarily reduced the allowable production from the field by more than 60,000,000 cubic feet daily, and set the allowable at 380,000,000 cubic feet, which is not adequate to meet the actual combined private market outlets of those producing sweet natural gas from the West Panhandle field for lawful purposes. This arbitrary and unreasonable allocation by the Commission in its said order renders that portion of the order fixing the allowable for the field null and void, be-

cause it operates to deprive complainant and those similarly situated of their property without due process of law and without compensation, in violation of the provisions of the Constitution heretofore pleaded.

XXXI

Complainant represents that it has the legal right, so [fol. 132] long as it can do so without waste, to produce, transport and sell its own gas; that it is under no legal or moral obligation to purchase gas from others, nor to divide with others its markets or marketing facilities; that the necessary operation and effect of said Act and said Order, if enforced, will be to put complainant in position where it cannot supply its market demands with its own gas, and where it can supply its market demands only by purchasing gas from others, if that be possible; that the consequence will be that complainant will be subjected to and suffer great immediate and irreparable loss and damage, which will continue to increase and amount ultimately to millions of dollars, by reason of its inability to produce and sell its own gas, the drainage of its gas through the operations of others, the probable loss or at least impairment of its market contracts and market outlets, and the interruption of, interference with, and burden upon its business, particularly its interstate business, founded and definitely established and heretofore orderly conducted upon the basis, planned and provided by it at great expense, of adequate reserves of gas with adequate production and transportation facilities to insure a sufficient constant and dependable supply of gas to its customers. Complainant has no adequate remedy at law to protect itself against such loss and damage, which can be avoided and prevented only through the enjoining of the enforcement of said Act and said orders, which complainant represents are null and void and unenforcible as against it for the reasons hereinabove set forth. The defendants composing the Railroad Commission of Texas have announced their purpose to enforce said Act and said orders, and they will enforce and attempt to enforce the terms of said Act and said orders against complainant and from time to time promulgate other similar orders, with the result that complainant will suffer the deprivation of its liberty of contract, loss of property, impair- [fol. 133] ment of its contracts, and all the other wrongs and

injuries hereinbefore averred in this bill; or, in the alternative, complainant will be forced to operate in violation of said Act and said orders and thus incur the danger of having to defend against harassing suits for penalties and other litigation directed at complainants with a view of forcing it to comply with said Act and said orders. In the event complainant should undertake to operate in violation of said Act and said orders, the defendants composing the Railroad Commission will doubtless direct the defendant William McCraw, Attorney General of Texas, to file such penalty suits and other litigation against complainant, with a view of forcing complainant to observe and obey said Act and said orders, and the defendant William McCraw will in all probability file penalty suits, injunction proceedings and other litigation against complainant, and complainant will be forced to incur great expense and costs incident to the defense of such suits, to its irreparable damage. In this connection complainant shows that the penalties provided for under the terms of said Act, particularly Section 23 of said Act, are oppressively high in that same might amount to $1000.00 for each day's violation of any of the provisions of said order of the Commission, and the operation of each well in violation of such order would constitute a separate offense, so that complainant would be subject to a possibility of being sued for $89,000.00 for each day that it might operate its wells in violation of said orders. Against all these losses, injuries, damages and prosecutions complainant would have no adequate remedy at law, and if not granted the relief for which it prays herein, complainant will suffer irreparable loss and injury.

Wherefore, premises considered, complainant prays that pending a hearing on the application of complainant for a temporary or interlocutory injunction as hereinafter [fol. 134] prayed for, this Honorable Court issue a temporary restraining order, restraining and enjoining the defendants and each of them, their deputies, assistants, employees, subordinates, clerks, successors in office, and all other persons with authority to act with or under them or in their respective places, from enforcing or attempting to enforce, by order, rule, suit, regulation, or otherwise, said Act or such order, or any clause or provision thereof, or promulgating any similar rule or order that would result in curtailing complainant's right to produce its gas from its

wells and leases located as aforesaid, up to the quantity for which it shall be able to find a market for legitimate and proper purposes; that a Three-Judge Court be constituted as provided by the Judicial Code, and that upon hearing before such Three-Judge Court complainant be granted a temporary or interlocutory injunction, restraining each and all of the defendants, their deputies, assistants, employees, subordinates, clerks, their successors in office, and all other persons with authority to act with or under them in their respective places, from enforcing or attempting to enforce, by order, rule, suit, regulation, or otherwise, any provisions of said Act or such order, or any other similar order that may be hereafter promulgated by the defendants composing the Railroad Commission, or any of them, to the same purport or end; that upon final hearing complainant have judgment declaring said Act and such orders void and unenforcible, together with a decree perpetually enjoining the defendants and each of them from any effort to enforce said Act and such orders, from collecting or attempting to collect from complainant any penalties for violating said Act or such order, and from promulgating any other order to the same purpose or end; and that complainant have judgment against the defendants and each of them for costs of [fol. 135] suit and all equitable relief to which complainant may show itself just entitled.

J. J. Hedrick, Chas. H. Keffer, Morgan, Culton, Morgan & Britain, Attorneys for Complainant, Texoma Natural Gas Company. S. A. L. Morgan, of Counsel.

Duly sworn to by J. G. Dickinson. Jurat omitted in printing.

[File endorsement omitted.]

[fol. 136] IN UNITED STATES DISTRICT COURT

No. 550. In Equity

[Title omitted]

COMPLAINANT'S AMENDMENT TO SUBSTITUTED BILL—Filed January 2, 1926

To Said Honorable Court:

Now comes Texoma Natural Gas Company, a corporation, complainant in the above entitled and numbered cause, and complains of Ernest O. Thompson, C. V. Terrell and Lon A. Smith, composing the Railroad Commission of Texas, and William McCraw, Attorney General of Texas, hereinafter called defendants, and represents to the Court that since the filing of complainant's bill in this cause and since the issuance of an interlocutory injunction herein, said defendants composing the Railroad Commission, purporting to act under authority of House Bill 266, referred to in plaintiff's bill of complaint herein, have issued an order captioned "Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas" bearing date December 10th, 1935, and about the same time said defendants issued a schedule purporting to fix the daily allowable production of gas from each gas well in the Panhandle District of Texas, which schedule was endorsed "Effective 7 A. M. December 11th, 1935, and until further notice," A Copy of said *co*-called Special Order, marked Exhibit "A", and a copy of said *co*-[fol. 137] called Schedule of Allowables, insofar as the latter affects wells in the West Panhandle field or zone belonging to complainant, marked Exhibit "B", are attached hereto and by reference expressly made a part of this pleading.

In its legal effect, said so-called special order is substantially the same order as the order before the Court at the time the Court was considering complainant's application for interlocutory injunction. The schedule fixing the allowables differs from the schedule issued in connection with the order before the Court at the time it was considering complainant's application for interlocutory injunction in that it increased the quantity of gas which complainant

was allowed to produce from its wells to an aggregate of 136,133,000 cubic feet daily. However, complainant now has a market for 150,000,000 cubic feet of gas daily, and said order and schedule of allowables, if enforced against complainant, would require complainant to divide its markets with other persons to the quantity of 13,867,000 cubic feet daily.

Thereafter, on December 18th, 1935, the defendants composing the Railroad Commission of Texas issued still another special order purporting to fix the allowable production of sweet and sour natural gas in the Panhandle District of Texas, a copy of which so-called special order, marked Exhibit "C", is attached hereto and made a part of this pleading. Said order is substantially to the same legal effect as the so-called special order copy of which marked Exhibit "A" is attached hereto, and the same affects the legal and equitable rights of complainant in the same manner and is therefore null and void for the reasons urged in complainant's bill filed in this cause and this amendment thereto. Under the schedule of allowables issued in connection with said special order dated December 18th, 1935, complainant will have to divide its markets and [fol. 138] marketing facilities with others in that it will have to purchase from others who are not interested in complainant's markets and market facilities a total of — cubic feet per day during the continuance of said special order through the month of January, 1936, and until such date thereafter as the same may be succeeded by a subsequent order of a similar nature.

Said orders above mentioned and said schedules of allowables are subject to the same constitutional objections urged by complainant against the orders and schedules in force at the time this Court was considering complainant's application for interlocutory injunction, and the same are null and void as applied to complainant and complainant's wells mentioned in its bill of complaint herein for the same reasons urged in said bill of complaint. Complainant adopts all of its allegations contained in said bill of complaint heretofore filed, and urges all the grounds set forth therein as against the so-called special orders and schedules promulgated by the defendants composing the Railroad Commission as above set forth, to the end that said so-called special orders and schedules be declared null and

void as applicable to complainant for the reasons set forth in its bill of complaint filed herein.

Wherefore, complainant prays that judgment be entered as prayed for by complainant in its bill of complaint heretofore filed, and that such judgment in all things cover the special orders and schedules promulgated by the defendants composing the Railroad Commission on December 10th, 1935, and December 18th, 1935, and that it have such other and further relief in equity to which it shall show itself entitled.

J. J. Hedrick, Chas. H. Keffer, Morgan, Culton, Morgan & Britain, Attorneys for Complainant. S. A. L. Morgan, of Counsel.

[fol. 139] [File endorsement omitted.]

[fol. 140] In United States District Court

No. 550. In Equity

[Title omitted]

Answer to Complainant's Amended or Substituted Bill of Complaint—Filed January 2, 1936

To Said Honorable Court:

Now comes Ernest O. Thompson, C. V. Terrell and Lon A. Smith, composing the Railroad Commission of Texas, and William McCraw, Attorney General of Texas, defendants in the above numbered and entitled cause, and in answer to the amended or substituted bill of complaint in said cause respectfully answer as follows:

1

Defendants admit the allegations of fact contained in paragraph I of said amended bill of complaint.

2

Defendants admit that this court has jurisdiction of this cause as alleged in paragraph II of the bill of complaint.

3

Defendants admit the allegations of fact contained in paragraph III of the amended bill of complaint.

4

[fol. 141] Defendants admit the allegations of fact contained in paragraph IV of the amended bill of complaint.

5.

Defendants admit the allegations of fact contained in paragraph V of the amended bill of complaint.

6

Defendants admit that natural gas cannot be stored like other mineral products as alleged in paragraph VI of the amended bill of complaint. Defendants have no knowledge of the truth or falsity of the other allegations of fact contained in paragraph VI as to what is necessary to be done to finance the purchase and development and marketing of natural gas and natural gas reserves.

7

Defendants have no knowledge of the truth or falsity of the allegations of fact contained in paragraph VII of the amended bill of complaint. Defendants have no knowledge of the total number of acres in leases acquired by complainant, or now owned by complainant, nor of the cost of same. Neither do the defendants have any knowledge of the length of the complainant's pipe lines, nor those of its affiliated company, or of the investments which complainant and its affiliated company have in said pipe lines and other property.

8

Defendants have no knowledge of any of the allegations of fact contained in paragraph VIII, nor of the negotiations which complainant entered into to market its gas or finance its projects, nor of the actions which complainant took in connection with such matter.

[fol. 142] 9

Defendants have no knowledge of the markets which complainant and its affiliated company have for natural gas

as alleged in paragraph IX of the bill of complaint, nor the contract entered into with the strippers and users of natural gas. In this connection, however, these defendants say that any contracts entered into by Natural Gas Pipe Line Company of America to supply gas to any distributor or user of natural gas are immaterial and do not have any bearing on the issues in this case, for the reason that Natural Gas Pipe Line Company of America is not a producer of natural gas in the State of Texas, and the provisions of H.B. 266, Acts of the 44th Legislature of Texas, and the order of the Railroad Commission adopted pursuant to such statute, did not effect or purport to effect the conduct of the business of Natural Gas Pipe Line Company of America. These defendants further say that any contracts which complainant, Texoma Natural Gas Company, may have entered into with reference to the production, sale and distribution of natural gas produced in the State of Texas were and are subject to the appropriate exercise of the police power of the State of Texas insofar as the production of natural gas in said State is concerned.

10

Defendants have no knowledge of the volume of any market which complainant might have for natural gas; but in this connection say that complainant's right to produce gas from its wells was and is subject to the appropriate exercise of the police power of the State of Texas in regulating such production.

11

Defendants have no knowledge of the terms of the leases owned by complainant as alleged in paragraph XI, nor [fol. 143] of the number of wells drilled and owned by complainant. Defendants have no knowledge of the additional wells which complainant will be required to drill under the terms of its leases, nor of the cost of same. Defendants deny the allegations of fact contained in the second paragraph of paragraph XI.

12

Defendants admit that complainant's leases are located in one general geological structure and that the gas is

found in porous rocks and sand which permit the migration of gas in the direction of a producing well. Defendants deny that under the operation of the laws of Texas the only protection complainant has against loss of natural gas through drainage to other wells is to drill wells on its own lands and capture the gas as rapidly as possible. In connection with this allegation in complainant's bill, defendants say that the necessary effect of the provisions of H.B. 266 enacted by the 44th Legislature of Texas was and is to protect the leases and reserves of complainant against drainage by prohibiting the production and use of sweet gas for carbon black purposes and for the purpose of extraction of the natural gasoline content of such gas.

Defendants admit that there is a communication between portions of the reservoir containing both oil and gas and those containing natural gas only. Defendants have no knowledge of the quantities of gas, from the area which produce natural gas only, which have been caused to drain into the low pressure areas in the oil producing sections of the field. Defendants have no knowledge of the total amount of gas withdrawn through all wells in said field. Defendants say that the creation of low pressure areas in [fol. 144] the oil producing sections of the field are not resulting in substantial drainage of gas from the leases and property belonging to complainant, because of the fact that complainant's leases are located at distance from such area; and the same allegation of fact is made with reference to the drainage alleged to be suffered from the production of sour gas as set forth in the third paragraph of paragraph XII.

13

Defendants admit that scattered throughout the Panhandle gas field there are many wells equipped for the producing of natural gas which have no market for the sale of their gas for the purposes permitted by H.B. 266. Defendants deny that the owners of such wells have the same opportunity and ability to finance the building of pipe lines and acquiring of distant markets for their gas for the reason that the building of such lines the distance which will be required to market such gas for lawful purposes and in commercial quantities are so great that the cost of such lines will inevitably entail the expenditure of

many millions of dollars, and such projects constitute projects which are beyond the financial ability of the average producer of natural gas, and especially beyond the financial ability of the owners of such unconnected gas wells to finance or enter into. Defendants have no knowledge of the obligations which complainant may have to purchase gas from others, or to divide its markets and pipe line facilities. In this connection defendants affirmatively aver that neither the provisions of H.B. 266, nor the provisions of the orders of the Commission adopted pursuant thereto, require complainant to purchase any gas or to divide its markets and facilities. Defendants deny the other allegations of fact contained in said paragraph XIII.

14

[fol. 145] Defendants have no knowledge of the total volume of gas originally contained in the Panhandle reservoir, nor the total volume in the formations underlying leases now owned by complainant originally contained. Defendants have no knowledge of the amount of gas which has been withdrawn from said reservoir by said complainant, but they deny that complainant has suffered drainage to the extent of 670,000,000,000 cubic feet of gas. Defendants deny that complainant during the first months of 1935 sustained an average daily loss by drainage of 240,000,000 cubic feet of gas, nor that complainant is suffering such loss at the present time, to wells which surround the wells and leases of complainant. In this connection, however, defendants say that complainant's wells and leases are surrounded by many wells which do not have an outlet for the sale of their gas for the purposes permitted in H.B. 266, and that certain owners of certain wells on account of their inability to produce and market their gas for lawful purposes have acquired injunctions which permit them to produce and utilize their gas for any beneficial purpose. Defendants further say that efforts are being made by these defendants to secure the dissolution of said injunctions, and that if and when said injunctions are dissolved that said wells which do not have a market for light and fuel purposes for their gas will be shut in entirely and the owners of said wells will be forced to cease producing gas from same, unless and until they find

a market for their gas for the purposes permitted in H.B. 266; that this will result in complainant producing from its wells while the wells of many of its neighbors are entirely shut in, which will result in time in the drainage of enormous quantities of gas from the unconnected wells surrounding complainant's leases to the leases of complainant and in the production of gas from such surrounding [fol. 146] wells through the wells of complainant.

The remaining allegations of fact contained in paragraph XIV are denied.

15

Defendants have no knowledge of the contract existing between complainant and Natural Gas Pipe Line Company of America, but say that any such contract was and is subject to the appropriate exercise of the police power of the State of Texas in connection with production of gas by complainant.

16

Defendants admit that the 44th Legislature of Texas enacted H.B. 266.

17

Defendants admit that the Railroad Commission of Texas promulgated the orders attached as exhibits to complainant's bill, and that the Commission made the finding of fact contained in said orders. Defendants deny that in making such finding the Commission acted without testimony or probative force and that such findings are in conflict with the testimony offered before the Commission. Defendants deny that complainant has never committed or caused any character of physical waste in the operation of its wells or that the producers of gas who have supplied other pipe lines transporting gas from the Panhandle field have not been guilty of causing physical waste. Defendants deny that the restriction of the total production of sweet gas for lawful purposes to the market demand for such gas is not necessary to protect and adjust the correlative rights and opportunities of the owners of various wells in said fields capable of producing sweet gas; on the contrary affirmatively aver that the provisions [fol. 147] of H.B. 266 expressly provide that when the total potential production from all such wells is not in excess of the reasonable market demand for such gas, that

the total production from all such wells shall be restricted to the market demand for such gas from the field and allocated among the various wells in the field, or for the purpose of protecting and adjusting the correlative rights and opportunities of owners of such wells to produce and market a fair share of the total gas withdrawn from the reservoir. Defendants affirmatively aver that complainant's right to produce gas is subject to the appropriate exercise of the police power of the State of Texas, and especially the terms and provisions of H.B. 266 enacted by the 44th Legislature, and to the terms and provisions of the lawful orders of the Commission adopted pursuant thereto. Any allegation of fact contained in paragraph XVII of the complainant's bill to the contrary is expressly denied.

18.

Defendants deny that there is no market for gas in the Panhandle field of Texas, and in this connection defendants say that the only market existing in the Panhandle field of Texas for sweet gas is that which is or may be afforded by the demands of large pipe line companies which produce gas from said field either through themselves or through affiliated companies. That in view of the fact that there are many owners of unconnected wells in said Panhandle field which do not have and cannot get the opportunity to produce and market sweet gas from said wells unless the same is taken or purchased by the pipe line companies which withdraw gas from said field, that the necessary effect or operation of H.B. 266 was and is to dedicate the sweet gas producing portions of the Panhandle gas field to the uses and purposes of the pipe line [fol. 148] companies, including this complainant. That the purpose of H.B. 266 is not only to prevent the commission of physical waste in the production of natural gas, but was also to prevent disproportionate withdrawals from said field on the part of any class of producers, and said act likewise had the purpose of protecting the interest of the public in the preservation of its gas reserves for light and fuel purposes. That unless the ratable production features of said H.B. 266 are valid and can be made effective, the effect of such statute will be to permit the complainant and those pipe line companies similarly situated to pro-

duce all the sweet gas in the West Panhandle reservoir through their own wells, including gas which is now under the leases and lands of the owners of those wells which do not have a present market outlet for the purposes permitted by H.B. 266.

19

Defendants deny that the provisions of H.B. 266 which require the Railroad Commission to restrict the total allowable production from all wells producing sweet gas to the amount of the daily reasonable market demand for such gas from a gas field are limited to instances where such restriction is imposed by the Commission for purpose of preventing and controlling physical waste. On the contrary it is affirmatively averred that it was the purpose and is the effect of the provisions of said statute to require such restriction whenever the total potential of all wells capable of producing sweet gas in such reservoir is in excess of the daily reasonable market demand for such gas. Defendants deny that such act when so construed is null and void, but on the contrary say that the same constitutes a valid and legitimate exercise of the police power of the State in protecting the interests of [fol. 149] the public in the purposes for which natural gas may be used and in preventing disproportionate withdrawals on the part of any producer of natural gas. Defendants have no knowledge of the purposes of the Legislature of Texas in promulgating H.B. 266, except as such purposes are revealed by the necessary operative effect of such statute. Defendants deny that complainant is not a corporation which is affected with the public interest and subject to the regulation by the Legislature of Texas.

20

Defendants have no knowledge of the amount of market which complainant has for natural gas nor of the percentage of the producing capacity of its wells which complainant is permitted to produce under said order. Defendants deny that to secure additional gas necessary to supply the market requirements of complainant that it would be necessary for complainant to build additional pipe lines and gathering systems and install meters at the wells. Defendants deny that wells which have connections with nat-

ural gasoline plants are not available for complainant's requirements; and defendants deny that the operative effect of the enforcement of H.B. 266 and the orders of the Commission will be to deprive complainant of any of its market outlet.

21

Defendants deny that H.B. 266 and the orders of the Commission are unconstitutional and void for any of the reasons assigned in paragraph XXI of the bill, or for any other reason; and on the contrary affirmatively aver that same constitute a valid exercise of the police power of the State of Texas. The allegations of fact contained in paragraph XXI are denied, except as they are in conform-
[fol. 150] ity with the affirmative allegations made in this answer.

22

Defendants deny that said act and said orders are unconstitutional for any of the reasons assigned in paragraph XXII of the bill, and in this connection affirmatively aver that said act does not effect or purport to effect or burden interstate commerce in that such act and orders passed under same simply relate to the amount of gas which complainant may lawfully produce from its wells, which actual production is solely a local matter as to which the interstate commerce clause of the United States Constitution has no relation.

23

Defendants deny that said act delegates unconstitutional powers and duties on the Railroad Commission of Texas for any of the reasons assigned in paragraph XXIII, or for any other reason.

24

Defendants deny that said act and the order promulgated thereunder are unconstitutional and void for any of the reasons assigned in paragraph XXIV of the bill, or for any other reason.

25

Defendants deny that allegations of fact contained in paragraph XXV, and deny that said act and said orders deprive complainant of its property and contract rights without due process of law.

26

Defendants deny that the provisions of the act and the orders which take into account only the tracts of land on [fol. 151] which wells have been drilled up to the efficient drainage area of said wells is arbitrary or unconstitutional and void; and in this connection aver that the act purports to be simply an act which restricts the production of gas wells. Under certain circumstances under the terms and statutes and orders complainant is afforded the right to participate in the total production of gas from the Panhandle field by producing from all of the wells which it owns or controls. The allegations of fact contained in said paragraph XXVI are denied.

27

Defendants deny that the allocation or apportionment between the various wells in the West Panhandle field is made in the orders of the Commission on an unreasonable, arbitrary and confiscatory basis for any of the reasons assigned in paragraph XXVII, or for any other reason.

28

Defendants deny that the Commission acted unreasonably or arbitrary in fixing the efficient drainage area of wells in the West Panhandle field at 640 acres, and especially do these defendants deny that such findings infringe on any rights of complainant or operate to injure complainant. All allegations of fact contained in paragraph XXVIII are denied.

29

All allegations of fact in paragraph XXIX are denied.

30

Defendants deny that the Commission's orders do not contain accurate findings as to the daily reasonable market demand for light and fuel purposes in the West Panhandle [fol. 152] field as alleged in paragraph XXX of the bill.

31

Defendants deny the allegations of fact and law contained in paragraph XXXI of the bill, and in this con-

nection say that complainant's rights in way of producing gas from its wells are governed and limited by the provisions of H.B. 266 and the orders of the Commission promulgated thereunder, and that same are valid and enforceable. In connection with the allegations in said paragraph, however, defendants say that complainant has never operated under the terms and purposes of said H.B. 266 and under the orders of the Commission promulgated thereunder; but defendants admit that if they were not enjoined from doing so they would undertake to enforce the provisions of said law and said orders against complainant as required by H.B. 266. All allegations of fact not expressly admitted in this answer are expressly denied.

32

By way of affirmative allegations defendants would further show to the court the following: That by the terms and provisions of the statute of the State of Texas, which statutes were in force when complainant secured its permit to do business in the State of Texas, it is provided that every corporation owning, operating, leasing or controlling within this State any wells, pipe lines, plant, property or permit (1) for sale or delivery of natural gas to the public for domestic or other use, (2) owning or operating or managing a pipe line for the transportation and carriage of natural gas either for public hire or if on any part of the right of way, which said line has been acquired or may be acquired by the exercise of the rights of eminent domain, or if said line or any part thereof is laid upon, [fol. 153] over or under any public road or highway of this State or street or alley of any municipality or the right of way of any railroad or other public utility; including also any natural gas utility authorized by law to exercise the right of eminent domain,—is declared to be virtual monopoly and a business affected with a public interest, and said statutes provide that this business and property employed in such business within this State shall be subject to the provisions of said law and to the jurisdiction and regulation of the Railroad Commission and such businesses are declared to be affected with a public interest. Said statutes likewise provide that the operation of gas pipe lines for bearing, selling, transporting, producing, taking or dealing in natural gas is a business which in its

nature and according to the established method of conducting a business is a monopoly and such gas pipe line so used or connected with such business is subject to the jurisdiction conferred upon the Railroad Commission. Said statute likewise provides, and provided when complainant secured its permit to do business in the State of Texas, that the Railroad Commission shall establish fair and equitable rules and regulations for the full control and supervision of said gas pipe line in all their holdings pertaining to the gas business and in all their relations to the public as the Commission may from time to time deem proper, and shall prescribe and enforce rules and regulations for the government and control of such pipe line in respect to their gas pipe lines producing, receiving, transporting and distributing facilities.

Defendants say that said statutes, being articles 6050, 6051 and 6053, Revised Civil Statutes of Texas of 1925 were enacted in 1920 and have been a part of the statutory law of Texas continuously since that time and were a part [fol. 154] of such law at the time that the complainant secured its permit to do business in the State of Texas.

That in view of the fact that complainant is a foreign corporation and that it secured its permit to do business in this State at a time when such statutes were in force, it should not now be heard to say that it is beyond the power of the State of Texas, or of the Railroad Commission of Texas to regulate the manner in which said complainant produces and withdraws gas in the gas fields of this State, nor should complainant be heard to say that it is not engaged in a business which is affected with the public interest and a virtual monopoly as declared by the law of the State of Texas at the time it secured its permit to operate in this State.

33

Defendants further say that complainant and other integrated pipe line companies similarly situated constitute the sole and only market for sweet gas for light and fuel purposes in the Panhandle gas field of Texas. That they, therefore, constitute a monopoly which is subject to regulation by an exercise of the police power of the State, and that if the provisions of H.B. 266 cannot be made effective, that said law would have the effect of dedicating all of the sweet gas producing portions of said Panhandle field

to the uses and benefit of said complainant and those pipe line companies similarly situated, including the gas owned and under the lands and leases of other operators in said field who do not enjoy the benefit of the control of the market outlet which is owned by complainant and those similarly situated.

34

Defendants further say that complainant should not have been heard to assert the invalidity of said H.B. 266 and the orders of the Commission adopted pursuant thereto on account of the following facts: That prior to the enact- [fol. 155] ment of H.B. 266 a law was in force in the State of Texas which authorized producers of natural gas in the Panhandle field of Texas where they had no reasonable markets for light and fuel purposes to utilize their gas for any beneficial purpose including the manufacture of natural gasoline and the blowing of the residue gas into the air. That complainant in connection with other pipe line companies, and those who shared their views, organized during the time that said prior law was in force a so-called Conservation Association, which for a period of more than a year prior to the enactment of H.B. 266 conducted an intensive campaign to procure the repeal of the statute which permitted the use of sweet gas for extraction of its natural gasoline content. That in the course of the activities of such association, which were directed by the agents and employees of the complainant and other pipe line companies, newspaper advertisements were printed, radio talks were sponsored, circulars and publicity data *was* assimilated throughout the State, tours of inspection through the Panhandle gas field by employees of the Texas Legislature were sponsored and paid for, and similar activities were indulged in, all for the purpose of procuring a repeal of the law which authorized the use of gas for the purpose of extracting its natural gasoline content, or stripping as the practice is known in the industry, and for the purpose of protecting the gas reserves owned by complainants and other pipe line companies, which would have the necessary effect of dedicating the entire sweet gas producing portion of the field to the uses and purposes of said pipe line companies, including complainant. That complainant through its representatives appeared before the 44th Legislature of Texas

urging a repeal of said prior statute for the purpose of securing the enactment of a law which would make such [fol. 156] practices unlawful and which would have the effect of protecting the reserves owned by complainant and of dedicating the sweet gas producing portions of said field to the purposes of complainant and other companies enjoying a monopoly on the market for sweet gas for light and fuel purposes. That in each instance after complainant has invoked and seeks to enjoy the benefits of a law which prohibits the stripping practices about which complainant was alarmed, complainant should not now be heard to assail the validity of the incidental burdens which said law may impose on the operations of complainant.

35

Defendants further say that prior to the promulgation of H. B. 266 and under said existing law as set forth in the preceding paragraph of this answer more than one billion cubic feet of gas per day was being produced and utilized in the Panhandle gas field of Texas for stripping purposes, the residue gas being blown into the air. That by said operations said gas reserve was rapidly being dissipated and such condition if allowed to continue would be in time probably have the effect of prematurely exhausting said gas reservoir. That many hundreds of towns in the State of Texas and elsewhere in the United States, and many millions of people were and are supplied with natural gas from the Panhandle Gas field of Texas for use as light and fuel for domestic and industrial purposes, and the public at large was and is greatly concerned with the preservation of said huge gas reserves as a source from which to supply its needs for natural gas for light and fuel purposes. That by the exercise of its police power the State had the right to promulgate any reasonable law which would have the effect of preventing continuation of the [fol. 157] practices which were rapidly dissipating and wasting said gas and which at the same time adjusted and protected the rights and equities of those owning producing gas lands in said reservoir. That in the exercise of its police power the Legislature of Texas was the judge of the remedy which should be adopted to prevent a continuation of the practices which it found to be harmful to the public interest, and said H.B. 266 as enacted

by the 44th Legislature constitutes a valid and reasonable exercise of such police power in the accomplishment of legitimate purposes.

Wherefore, having answered fully herein, the defendants pray that complainant take nothing by virtue of its suit, and that defendants go hence without day with their costs.

(Signed) William McCraw, Attorney General of Texas; (Signed) W. J. (Dick) Holt, Assistant Attorney General; (Signed) T. F. Morrow, Assistant Attorney General; (Signed) William C. Davis, Assistant Attorney General; (Signed) Wm. Madden Hill, Assistant Attorney General; (Signed) C. C. Small, Special Counsel; (Signed) Maurice Cheek, Special Counsel, Attorneys for Defendants.

[File endorsement omitted.]

[fol. 158] In United States District Court

No. 550. In Equity

[Title omitted]

Complainant's Supplemental Bill—Filed January 2, 1936

To Said Honorable Court:

Now comes Texoma Natural Gas Company, a corporation, complainant in the above entitled and numbered cause, and files this its supplemental bill of complaint and replication in reply to the answer of defendants to complainant's bill as follows:

1

Complainant admits that any contracts which it may have entered into with reference to the production, sale and distribution of natural gas in the State of Texas are subject to the appropriate exercise of the police power of the State of Texas; but in this connection represents that the act known as House Bill 266 and the orders promulgated by the defendants composing the Railroad Commission pur-

porting to be in pursuance thereof, insofar as the same operate to curtail complainant's production and require it to divide its markets and marketing facilities with others, as set forth in complainant's bill, do not constitute a valid [fol. 159] exercise of the police power of the State of Texas, but same are invalid and inoperative as against complainant for the reasons set forth in its bill of complaint herein. Complainant denies that the act and orders herein complained of, insofar as they affect complainant and complainant's properties, constitute a valid exercise of the police power of the State, as alleged by defendants in several sections of their answer.

2

Complainant denies the allegation contained in Section 12 of defendants' answer that the necessary effect of the provisions of House Bill 266 is to protect the leases and reserves of complainant against drainage; and it denies the allegation contained in the second paragraph of the same section to the effect that the creation of low pressure areas in the oil producing sections of the field are not resulting in substantial drainage of gas from the leases and property belonging to complainant; and denies the further allegation to the effect that production of gas from the sour gas area under the operation of said act and said orders is not resulting in substantial drainage of gas from the leases and property of complainant.

3

Complainant denies the allegation contained in Section 13 of said answer, wherein defendants allege that neither the provisions of House Bill 266 nor the provisions of the orders of the Commission purported to be adopted pursuant thereto require complainant to purchase any gas or to divide its markets or facilities.

4

Complainant denies the allegation contained in Section 14 of said answer to the effect that if complainant be not required to comply with the curtailment provisions of the [fol. 160] orders issued by the defendants composing the Railroad Commission purporting to act under authority of

House Bill 266, the result will be in time in the drainage of enormous quantities of gas from the unconnected wells surrounding complainant's leases to the leases of complainant. In this connection complainant shows that by reason of the physical facts set forth in complainant's bill of complaint, complainant will never be able to take from said reservoir its rightful share of the gas contained in said reservoir at the time complainant acquired and developed its properties therein.

5

Complainant denies the allegations contained in Sections 18 and 19 of said answer wherein defendants allege that the purpose underlying the enactment of House Bill 266 was to prevent disproportionate withdrawals from said field, and denies that unless the ratable production features of said bill are valid the effect of such statute will be to permit the complainant and other pipe line companies similarly situated to produce all the sweet gas in the West Panhandle reservoir through their own wells. In this connection complainant avers that the underlying purpose of House Bill 266 was to empower the Railroad Commission to issue orders to prevent waste of natural gas and that any order which the Commission might promulgate otherwise than to prevent waste would be null and void for the reasons set forth in complainant's bill. Complainant further represents that it has no desire to take the gas in said field otherwise than that underlying its own leases, but insists upon its right to produce the gas underlying its own leases from its own wells to the extent that it can obtain markets therefor for lawful uses and so long as it can do so without committing waste.

6

Complainant denies that said act and orders herein com- [fol. 161] plained of do not affect or purport to affect or burden interstate commerce, as alleged by defendants in Section 22 of their answer.

7

Complainant denies that it is a monopoly, as alleged in Section 32 of defendants' answer; denies that it can be

validly declared to be a monopoly by mere legislative fiat; denies that by securing a permit to do business in the State of Texas it became subject to rules and regulations of the Railroad Commission made in pursuance of any statute of this State, when such rules and regulations necessarily operate to destroy its constitutional rights in the particulars set forth in complainant's bill; denies that the act and orders herein attacked are fair and equitable. In this connection complainant shows that at the time it obtained its permit to do business in the State of Texas there was no constitutional, statutory or other statute, rule or regulation operating to deprive complainant of its constitutional right to purchase and develop properties for the production of gas therefrom, to establish and maintain transportation facilities for conveying such gas to market, and transporting its gas from its wells in the State of Texas through its transportation facilities to its markets outside the State of Texas, and the fact that complainant obtained a permit to do business in the State of Texas can in no wise deprive it of its right to assert its constitutional objections to statutes, orders and regulations passed subsequent to its obtaining such permit.

8

Complainant denies the allegation contained in Section 33 of said answer wherein defendants charge that complainant [fol. 162] is a monopoly; denies that if the provisions of House Bill 266 can not be made effective that said law would have the effect of dedicating all the sweet gas producing portions of the Panhandle field to the uses and benefit of complainant and other similarly situated. In this connection complainant again avers that it has no desire to produce or take any gas belonging to others, and that the State of Texas has full power through the enactment of appropriate legislation to limit the taking of gas by complainant to the gas that underlies its own leases, and the enactment of such legislation would protect all those concerned against the character of drainage which complainant had suffered at the hands of others, as set forth in its bill of complaint.

9

Complainant admits that prior to the enactment of House Bill 266 a law was in force in the State of Texas which pur-

ported to authorize certain producers of natural gas in the Panhandle field to utilize their gas for the manufacture of natural gasoline and blow the residue into the air, which operation resulted in a waste of 97% of the heat value, or fuel value, of the natural gas produced and so disposed of. In this connection complainant shows that those purporting to operate under said law produced gas greatly in excess of their proportion of the current production of gas from said field, with the inevitable result that the leases of complainant and those similarly situated, who were using their gas for light and fuel and who were producing it only as rapidly as it could be marketed without waste, were being rapidly drained and depleted of the natural gas underlying their leases, with consequent losses to complainant and others similarly situated, which losses assumed such proportions as that the gas producing properties and reserves of com- [fol. 163] plainant were threatened with absolute destruction within a very short time. Complainant admits that in connection with other pipe line companies and with numerous others who were opposed to such wasteful use of natural gas, it cooperated with the Panhandle Conservation Association in dispensing facts concerning the waste of natural gas in the Panhandle and the threat that such waste constituted to those owning property interests in said Panhandle gas field, and to those who were relying upon the Panhandle gas field as a source of supply of natural gas. It admits that its representatives appeared before the 44th Legislature, along with representatives of other pipe line companies and others interested in the Panhandle gas field, urging a repeal of the said statute which purported to authorize such wasteful utilization of natural gas; and admits that its purpose in joining in the campaign of publicity exposing such wasteful production of gas and in appearing before the 44th Legislature was for the purpose of securing the enactment of a law which would make such practices unlawful and which would have the effect of protecting the reserves owned by complainant. Complainant denies that it sought the enactment of any statute that would dedicate the sweet gas producing portions of said field to the uses and purposes of complainant and other pipe line companies enjoying a monoply on the use of sweet gas for light and fuel purposes; again denies that it and the other companies

similarly situated enjoy such monopoly; denies that complainant ever invoked the statute actually enacted, known as House Bill 266, for any purpose; and denies that its conduct in the premises operates to place complainant in a position where it should not now be heard to assert the invalidity of the provisions of said bill which operate to take [fol. 164] and destroy its property in the particulars set forth in complainant's bill.

10

Complainant admits that the gas reserves in the Panhandle were being rapidly depleted prior to the enactment of House Bill 266, and that many hundreds of towns in the State of Texas and elsewhere and many millions of people were supplied with natural gas from the Panhandle field, as averred in Section 35 of defendant's answer; but complainant denies that in the exercise of its police power the State has the right to promulgate any law or any order which will operate to deprive complainant of its property and its property rights in violation of the various constitutional provisions pleaded in its bill of complaint; denies that the provisions of House Bill 266 which complainant attacks herein operate to prevent waste or have any relation to the prevention of waste; denies that the Legislature of Texas is the judge of the remedy which should be adopted to prevent a continuation of the practices which it found to be harmful to the public interest, unless its judgment prompt it to enact legislation not in violation of complainant's constitutional rights set forth in its bill of complaint. In this connection complainant avers that it was not necessary for the Legislature to undertake to impose upon complainant and those similarly situated the burdens imposed upon them under the operation of House Bill 266, as construed by the defendants, and the orders promulgated by the defendants composing the Railroad Commission purporting to act in pursuance of such statute, in order to stop the wasteful production and utilization of gas prevailing at the time said statute was enacted. Complainant admits that the Legislature was entirely within its power and au- [fol. 165] thority in prohibiting the wasteful production and utilization of gas which prevailed in the Panhandle of Texas at the time it enacted House Bill 266; but denies that it had the power and authority to undertake to compensate

those guilty of such wasteful practices by taking complainant's markets and marketing facilities and its gas to the extent of enormous quantities and pass same over to those guilty of such wasteful practices.

Wherefore, complainant prays as in its bill of complaint heretofore filed in this cause.

J. J. Hedrick, Chas. H. Keffer, Morgan, Culton, Morgan & Britain, Attorneys for Complainant. S. A. L. Morgan, of Counsel.

[File endorsement omitted.]

[fol. 166] In United States District Court for the Western District of Texas, Austin Division

In Equity. No. 539

Texas Panhandle Gas Company, A Corporation, Complainant,

vs.

Ernest O. Thompson et al., Defendants

Before Hutcheson, Circuit Judge, and Kennerly and McMillan, District Judges

Opinion of the Court—Filed October 7, 1935

Hutcheson, Circuit Judge:

A continuation of the controversy which has long been going on in the Panhandle gas field, this litigation has for its background the same familiar figures, the same interests, the same general issues. Canadian River Gas Co. vs. Terrell, 4 Fed. Sup. 222; Texoma Natural Gas Co. vs. Railroad Commission, 59 Fed (2d) 750; Texoma Natural Gas Co. vs. Terrell et al, 2 Fed. Sup. 168; Sneed vs. Phillips Petroleum Co. 78 Fed. (2d) 785. Here, as before, in the favorable situation of the pipe line companies as to markets for their gas for light and fuel uses, and the unfavorable situation of other well owners who have not markets, may be found the real genesis of the law and order under attack.

All recognize that this is so. All agree that the purpose

and the probable effect of the order complained of will be the same as that intended for the orders enjoined in the earlier cases, to require plaintiff, and those situated like plaintiff, to supply part of their needs by purchase from well owners having no markets, by preventing their supplying all of them from their own wells.

[fol. 167] Plaintiff insists that the law itself, the order issued under it, and the facts it is applied to, are in substance the same law, the same order and the same facts as those which were presented and ruled adversely to the Commission in the earlier cases. Defendants deny this. They say that at last they have a law and order which, based on a different situation and exerting different powers, presents a valid exercise of the police power, a valid regulation of the State's natural resources. They claim that the grounds of invalidity successfully urged against the orders in those cases do not apply here, because (a) this one rests upon a finding of waste, and (b) was entered in the exertion of a power to protect correlative rights, not granted to the Commission in the earlier cases, but specifically granted here.

Plaintiff insists that the finding of waste is a fiating, not a fact finding at all, a mere arbitrary conclusion entered without any credible evidence to support it, and flatly contradicted by the admissions and all the evidence in the former cases, and all the credible evidence in this. It points to the fact that it was entered after the order, promulgated by the Commission under its claimed authority to equalize opportunities in the field, had come under attack, as conclusive that it is a mere makeweight fiating, to bolster up the insufficient grounds originally put forth. It insists that the order in form limiting the plaintiff in the use of its market facilities and markets, but in fact designed to appropriate them in part to the use of other well owners not so equipped, was entered and must rest, not upon considerations of preventing waste, but entirely upon those of equalizing one well owner with another, by so limiting the takings [fol. 168] from their wells, of those having markets and market facilities as to compel them to purchase and take from the wells of those who have neither.

Upon the showing in plaintiff's bill as to the similarity if not complete identity, of this case with all the others, and that the immediate enforcement of the order against it would either deprive plaintiff's customers, towns and cities

and their people, of the gas they counted on to sustain their civic life, or would put plaintiff to an enormous expense unnecessarily incurred if the law and the order were held invalid, a restraining order pending the interlocutory hearing, was issued.

The considerations which there prevailed, that no substantial injury could follow a temporary restraint pending hearing, while serious and irreparable inconvenience and loss would certainly follow the refusal to grant it, are urged upon us here in support of plaintiff's application for an interlocutory injunction pending a hearing of the cause on its merits. Defendants insist that the temporary injunction should be denied. They urge that the questioned order was entered to make effective a comprehensive legislative scheme to regulate and control the taking of gas from the field, so as to prevent its waste; that a part of that scheme was to supply a market for light and fuel to owners of wells whose use of their gas for stripping and other wasteful purposes the amended law had prohibited; and that if the pipe line companies were permitted to supply their requirements from their own wells without sharing their facilities with others, there would result the injustice of depriving well owners without market for light and fuel of right to use their gas, while others with markets [fol. 169] were permitted to fully use theirs.

Plaintiff, conceding that this would indeed be the result, insists that not the situation caused by the present law, but that complained of in Sneed vs. Phillips supra, caused by the old law was the unjust one. That the present law prohibits all from wastefully using, enjoins upon all to use, gas non-wastefully. That plaintiff is not now using, and never has used its gas wastefully, and that those for whose benefit the Commission has enacted its order have the same right in law to use their gas for light and fuel purposes as plaintiff has, if they will, at their own expense, as plaintiff did at its, provide themselves with market facilities and markets. It insists that there is no principle under our law by which the facilities and property of one person may be appropriated by law to the use of another. It declares that an order attended with such results is supported by no presumptions, but on the contrary, comes heavily burdened with presumptions against it.

In addition to invoking the protection of the Federal Constitution plaintiff points to and invokes the State statutes authorizing court review of orders of the Commission, and the granting of an injunction pending final judgment in that proceeding. Insisting that whatever may be the correct rule as to the presumptions attending the findings of the Commission, and the burden to overthrow them when the Federal Constitution alone is invoked, the statutory burden in a review proceeding is met when a preponderance of the evidence shows the order to be wrong. It reminds us of the State statute providing that pending the trial of that issue on the merits, one who seeks a review of the Commission's order may have the status preserved by a temporary [fol. 170] decree. Plaintiff, in short, while insisting that viewing this as a constitutional suit it has, on the face of the proceedings and in the state of the record, clearly shown that the order was wrong and cannot stand, and that it should have a temporary decree against it, urges further that looking at it as a statutory suit as well, it is quite plain that a consideration of the equities requires a stay pending this proceeding for review.

Whether the Legislature may, in the absence of waste, and in the interest alone of eliminating abuses, evils and injustices which it may be claimed the present "law of capture" entails, taking into consideration by means consistent with due process, the vested rights of all owners in a field, provide a substitute for the now prevailing rule, we need not now consider, for it has not, in the statute before us, undertaken to do this.

The statute, House Bill No. 266, is a comprehensive one, declaring the policy of the State with reference to the conservation of natural gas and the prevention of waste in its production. It classifies gas as sweet and sour, provides the uses to which each kind of gas may be put, authorizes the zoning of a field for the purpose of its regulation and administration, and directs the Commission in the discharge of the duties imposed and powers conferred, and provides penalties. That it is a waste statute only, its declaration of policy [1] makes clear. The specific sections involved here are Sections 10 to 19.

Section 1. "Declaration of policy; In recognition of past, present, and imminent evils occurring in the production and

[fol. 171] Section 10 directs the Commission to prorate and regulate the production of gas from each common reservoir, for the protection of public and private interests, (a) In the prevention of "waste" as defined herein; (b) In the adjustment of correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas as permitted in this article. The remaining sections direct when and how the Commission shall discharge the duty imposed and exercise the authority conferred in the matter of regulating and prorating the production of gas "from gas wells to be used for light and fuel purposes to which sweet gas may be put under the terms of this article."

These sections provide for the hearing and determination of waste and market demand, and for zoning fields. They designate the limits within which restrictions may be imposed, and generally lay out and prescribe the Commission's course in discharging its agency.

Taking it at the best for defendants' claim of authority to enter the order in question, the statute has undertaken to say no more than that, without reference to waste, where there are wells in a field having no market for their production those who have markets may not take their full needs from their own wells. This is very far from either attempting, or accomplishing, the repeal of the rule of capture and the substitution for it of another rule of taking, consistent with vested rights, fair dealing and due process. This is merely to say what we have said in the "Shutdown" Case 2 Fed. Sup. supra could not be justly done, that "in order to hasten the day when pipe line companies would voluntarily purchase from well owners having no markets" the Commission could limit the permissible takings from their wells below their absolute needs.

[fol. 172] If then, as the Commission contends, the Legislature meant to say that without regard to questions of waste, persons who had provided themselves with markets

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use of natural gas, as a result of waste in the production and use thereof in the absence of correlative opportunities of owners of gas in a common reservoir to produce and use the same, this law is enacted for the protection of public and private interests against such evils by prohibiting waste and compelling ratable production."

should, because other well owners had no markets, be prevented the full use of them, the law would on its face be a class law, unjust and partial; and designed as it would be to take the property of one class to give it to others, would be invalid; a taking of property without due process, a denial of the equal protection of the laws. If, however, as we believe from a reading of the Act, the Legislature meant only to provide, as it has for some time been doing in its proration statutes, that when there was waste attending full actual production from wells having markets, and because thereof it became necessary to restrict that production, this restriction should be so instituted and carried out as to reasonably and equitably protect the rights of all actual producers that is, those having markets in the field, the law is valid, and the question arises on the order. We have all along recognized that it is a necessary result from the rule that production may be restricted to prevent waste, that, when restriction is done, it must be done equitably and uniformly over all of those actually producing for the market. Peoples Petroleum Co. vs. Sterling, 60 Fed. (2d) 1041; Danciger vs. Smith, 4 Fed. Supp. 236; Amazon Petroleum Corporation vs. Railroad Commission 5 Fed. Sup. 633; The courts of Texas have recognized it; Danciger vs. R. R. Comm. 49 S W (2d) 837; Brown vs. Humble Oil Co. 83 S W (2d) 935.

We turn then to the order, inquiring (1) whether there is any evidence that waste is being, or is about to be, committed by the operations the order is aimed at. (2) Whether, if there is, the measures taken by the order have a reasonable relation to its prevention and (3) whether, in the exercise of a sound discretion the interlocutory injunction should be granted or denied.

[fol. 173] The order creates two zones, the Eastern and the Western. It purports to determine the market demand on the basis of the needs of those having markets, and then to apportion this demand not among the wells supplying it, but among those wells and the wells of others having no markets. The basis fixed for the apportionment of the allowable to each well is 50% on the potential of the well, and 50% on acreage, the acreage factor being taken not at the number of acres actually owned by each well owner, but at a set figure of 160 acres assumed to be the reasonable drainage area per well.

Plaintiff's affidavits are to the effect that its operations are not now causing, and never have caused any waste of gas in the reservoir, and that it has not taken and will for a long time be short of taking, the amount of gas underlying the acreage which it owns. Defendants' affidavits are to the effect that plaintiff's wells have created a low pressure point in the field, by large takings there over a period of years, and that though plaintiff has not taken more gas from the wells than originally underlay all his property, he has taken more gas than originally underlay the wells apportioned under the 160 acre basis fixed by the Commission.

Two of defendants' affidavits are to the effect that the proper way to develop that field would be to drill it closely, so that gas could be taken from wells without undue migration to the point of outlet; that if all the gas in the field has to travel long distances to get to outlets, much of its pressure will be dissipated and wasted, so that a great deal of it having insufficient pressure for pipe line use will be left in the ground. They do not show that the field is closely drilled; they do not show how undue migration would be [fol. 174] diminished or affected by taking gas which has been coming from plaintiff's wells, from other wells in the same vicinity. Their affidavits contain mere general statements that drawing gas to outlets from a long distance is not the best way to produce the field. The Act does not provide for, nor does the order give, protection to any undrilled portion of the field, nor does it take anything into consideration except the wells already drilled, and then only for the purpose of dividing production among them.

The order as originally entered contained no reference to or finding on waste. Later an amended order was filed containing a finding that waste was occurring. There was no provision in either order requiring that plaintiff should take gas from wells having no outlet, or providing such wells with an outlet. Though it was contemplated that the effect of the order would be to compel plaintiff to supply its needs by other takings than those allowed from its own wells, nothing in the order compels this. On its face then, since the wells it was designed to benefit have no market outlet, it operates not as a proration, but simply as a reduction order.

It is plaintiff's position that the finding of waste is wholly without support in the evidence, that nothing more appears

than a general conclusion that complete drilling of the field would produce a greater ultimate yield. It insists that if the finding of waste is supported by the evidence, the order the Commission made reducing plaintiff's production has no reasonable relation to the prevention of such waste; that it does not provide for either ratable takings or for complete development of the field, it merely operates arbitrarily to reduce plaintiff's takings. It insists too, that the order is invalid and unreasonable in apportioning the allowable on the basis of the arbitrarily assumed 160 acres instead of on the basis of the actual acreage owned. It argues that these, in connection with all the other facts in the case, [fol. 175] conclusively established that the whole purpose and effect of the order is not to prevent waste, but to divide plaintiff's markets with those who have none,[2] a purpose and effect beyond the sanction of law. It argues especially that whatever a hearing upon the merits will disclose, and whatever order should be then entered, the equities of the case require that pending the hearing on the merits, its injunction be continued in force.

Defendants, relying on the rule of presumptions in favor of the Commission's order, and the reluctance which courts feel to restrain the action of state officers purporting to have been taken within the law, insist that the order should not be restrained. They say that plaintiff has taken a foreshortened view of the matter; that restricting its gaze to its own operations, it has failed to observe the whole scene in the light of which the order must be read; a scene in which plaintiff's operations are but a small part of the whole. The whole, they say, is a condition of wasteful production referred to in detail in Sneed vs. Phillips Petroleum Co. 78 Fed. (2d) 785, which existed in the Panhandle field when under the former law wasteful operations were permitted to be carried on by those who had no markets for their gas for light and fuel. They say that the Legislature, desiring to stop the wasteful uses of the gas, but unwilling to do so without giving the owners of those wells

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Note 2. A very modernistic application of remedial measures to conditions the old nursery rhyme depicts:

"This little pig went to market,
This little pig stayed at home;
This little pig had roast beef for dinner,
This little pig had none."

markets for their gas for light and fuel in lieu of the markets for wasteful uses which the new law would deprive them of, enacted the present law as a complete scheme for [fol. 176] regulating waste in the field, and authorized the Commission to make the order it did to carry out that scheme. They say, too, that viewed entirely from the standpoint of the plaintiff's operations, there is sufficient evidence to support the findings the Commission made of waste, and the order they made as having a reasonable relation to preventing it.

We think it perfectly plain that the fact that the Legislature wished to prohibit the use of gases for wasteful purposes, but was unwilling to do so without supplying well owners with markets for their gas for useful purposes, that is, for light and fuel, would not, if it were a fact, be warrant for a law apportioning to the use of these well owners, markets and facilities, the private property of others.

We reject, then, the idea that the Legislature, in order to placate those whose wasteful use of gas it was forbidding, intended to take the facilities and property of others to give it to them. We think it plain that the order cannot stand upon such considerations.

When we consider the Commission's order on the alternative ground put forth to sustain it, that the evidence does not overthrow the presumptions attending the finding that plaintiff's operations were wasteful, and its conclusion that the order had a reasonable relation to preventing it, we are in no doubt that plaintiff should have its injunction. For, whatever the ultimate decision on the merits of this case may be after its full development on the law and the facts, we think it plain that as the matter stands on the record now before us not to grant the relief prayed for would be an abuse of our discretion, not to do so would result either in depriving the public of gas for which it has contracted and on which it relies, or if plaintiff, complying with [fol. 177] the order, undertakes to supplement its takings by connecting with the wells of others, it will serve to put plaintiff to great and unnecessary expense if the law be found invalid.

At best for defendants, the authority they seek to exert is greatly disputed and doubtful. The evidence before us greatly preponderates against, if it does not wholly overthrow, their claims. The injury from a refusal to grant the

injunction is imminent and great; that from granting it pending the early trial of the issues already provided for, slight and remote. Let the interlocutory order issue.

[File endorsement omitted.]

[fol. 178] IN UNITED STATES DISTRICT COURT, FOR THE WESTERN DISTRICT OF TEXAS, AUSTIN DIVISION

No. 550. In Equity

TEXOMA NATURAL GAS COMPANY, Complainant,

vs.

ERNEST O. THOMPSON ET AL., Defendants

Before Hutcheson, Circuit Judge, and Kennerly and McMillan, District Judges

OPINION—Filed October 7, 1935

Per CURIAM:

Complainant, owning gas lands in what the Commission has zoned as the West Panhandle Field, complains of the order of the Commission limiting the production from its wells below its market requirements.

While as to the lands owned, the zones occupied, the rock pressures of plaintiff's wells and of those adjoining, the facts in this case differ from those in the case of Texas Panhandle Gas Co. vs. Ernest O. Thompson et al this day decided, in so far as material to the decision, the facts in the two cases are the same, the issues and contentions the same.

It will serve no useful purpose then, to write in this case; it will suffice to say that for the reasons given in the opinion in that case, the temporary injunction should be granted.

[fol. 179] [File endorsement omitted.]

[fol. 180] IN UNITED STATES DISTRICT COURT, WESTERN DISTRICT OF TEXAS

Equity. No. 539

CONSOLIDATED GAS UTILITIES CORPORATION, Complainants,

versus

ERNEST O. THOMPSON ET AL., Defendants

Equity. No. 550

TEXOMA NATURAL GAS COMPANY, Complainant,

versus

ERNEST O. THOMPSON ET AL., Defendants

Before Hutcheson, Circuit Judge, and McMillan and Kennerly, District Judges

OPINION OF THE COURT—Filed March 31, 1936

HUTCHESON, Circuit Judge:

On amended pleadings bringing down to date [1] the proration orders of the Commission, plaintiffs complain of, these causes went on January 6, 1936, to final hearing on their merits.

Though complainants' attacks were leveled against both the Statute, House Bill No. 266 (Acts of Texas 1935 c. 120 Vernon's Ann. Civ. Stats. Texas Art 6008) and the orders of the Commission, the primary attack was, it was bound to be, on the orders. For none of the matters of which complaint is made are the result of the self-execution of any of the provisions of the Statute. They arise on, they exist, only because of the orders. The Act is under attack only if and to the extent that it supports the complained of orders. Both Act and orders are greatly comprehensive. [fol. 181] The Act declares the policy of the State in the conservation of natural gas and the prevention of waste in its development and production, and provides broadly for its administration by the Commission. It classifies gas as

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Note 1. Texas Panhandle Gas Co. vs. Thompson, 12 Fed. Supp. 462.

sweet and sour, fixes the uses to which each kind of gas may be put, authorizes the zoning of fields for the purpose of their regulation and administration, directs the Commission in the discharge of duties imposed and powers conferred, and provides penalties. The specific sections of the Statute involved here are Sections 10 to 20, Vernon's Ann. Civ. Stats. of Texas, Art 6008.[2]

The orders under attack, particularly that of December 10, 1935, are, as to the area in question, the Panhandle District of Texas, like the Statute, conceived and couched in comprehensive terms, and purport in accordance with the Statute, to bring the whole field under a comprehensive plan of regulation and control. Upon a full recitation of the history of the field, physical, political and legal,[3] which we

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Note 2. Section 10 directs the Commission to prorate and regulate the production of gas from each common reservoir, for the protection of private and public interests, (a) in the prevention of "waste as defined herein", (b) "In the adjustment of correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas as permitted in this article." The remaining sections direct when and how the Commission shall discharge the duties imposed and exercise the authority conferred.

These sections provide for the hearing and determination of waste and market demand and for zoning fields. They designate the limits within which restrictions may be imposed and generally lay out and prescribe the Commission's course in discharging its agency.

[fols. 182-185] Note No. 3:

Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas

* * * * * * *

"The Panhandle oil and gas field structure lies along a buried mountain range known geologically as the Amarillo Arch, that extends along the length of the field, continuing in a southeasterly course into the southwesterly portion of Oklahoma, where it comes to the surface as the Wichita Mountains, at an elevation of approximately 1000 feet above sea level. The field is a belt lying in a southeasterly north-

adopt as substantially correct, in general this plan created two zones, the Eastern and the Western, fixed the drainage area of each well in each of these zones, and, in the Western Panhandle Field, where alone sour gas was found to exist, established a line of demarkation between sweet and sour gas areas.

Plaintiffs do not complain of the zoning provisions of the order. Neither do they complain of the Statute or order

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westerly direction and extends from eastern Wheeler County to northern Moore County, Texas. It is approximately 124 miles in length with an average width of approximately 20 miles, containing 1,504,386 acres; there being 1,066,662 acres of sweet gas, and 437,724 acres of sour gas territory. The field is located in the counties of Hartley, Moore, Hutchinson, Potter, Carson, Gray and Wheeler. The oil producing area covers a belt about 90 miles in length lying on the northeast flank of the structure.

The oil and gas so far encountered in the Panhandle Field has been found, with minor exceptions, in four separate strata; namely the dolmite, and arkosic-dolmite, the gray limestone and the granite wash. These four formations overlie one another, and though they are normally separated one from another by impervious strata, they are interconnected as is shown by the fact that the virgin pressure of the oil and gas from all of them was 430 pounds per square inch at sea level, regardless of the location in the field.

Gas was first discovered in northern Potter County, Texas, in December 1918, and was encountered at a depth of 2,605 feet. The gas production for several years was developed only incidentally in the search for oil. The first important oil was discovered in 1925 and the major oil pools were developed in 1926 and 1927. The development of the gas field became prominent about 1926, and continued until 1929 when it was temporarily halted by the "depression." Since 1933, the gas field has been developed at a very rapid rate.

The oil wells in the oil pools in the field were, as a general rule, drilled through one or more gas-containing strata before entering the oil-containing stratum, and, in many instances, the wells were so completed as to cause production of gas from the gas strata along with the oil and gas

demarking sweet from sour gas areas and dedicating gas from the wells in each area to the uses the Statute provides. [fol. 186] Their complaint is general against the provisions of the order which, fixing an allowable production from plaintiffs' wells below the amount they require and have been taking from their wells to serve their customers' needs, makes it compulsory upon them to purchase from the wells of others gas of which plaintiffs have an already

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from the oil stratum, with the result that tremendous quantities of gas have been produced with the oil, large portions of it coming from gas-producing strata above the oil-producing strata. This gas was in large part blown into the air, and it has been estimated that in excess of two trillion cubic feet of gas produced in this manner has been wasted into the air.

Coincident with the development of the Borger pool casinghead gasoline plants were erected therein in which considerable portions of the gas produced therein were processed for the extraction of the gasoline content thereof, and, there being no market for the stripped gas, called "residue gas" resulting from the operation of said plants, the bulk of such residue gas was wasted into the air. In varying degrees, the same is true of the other oil pools as they were developed and operated.

The Panhandle Field is so far removed from centers of population and industrial activity that little value was at first placed upon the enormous quantities of gas therein found, but, due to the development of the casinghead gasoline plants and the resultant abundant supply of cheap residue gas that was being wasted into the air, the carbon black industry was attracted to the area, and in September 1926, the first carbon black plant was completed. It was located in the Borger pool, and proceeded to burn considerable quantities of such residue gas for the manufacture of carbon black. Thirty additional carbon black plants have since been built and placed in operation in the field. The combined throughput capacity of said plants is approximately 570,000,000 cubic feet of gas daily. In excess of 70 per cent of the carbon black manufactured in the United States is being manufactured in the Panhandle Field.

There are, at present, 1090 natural gas wells in this field. These wells have a total daily open flow potential of

ample supply. Their claim as to these provisions is that since it is undisputed that plaintiffs are and always have been producing their wells without waste of any kind, the order as to plaintiffs is not a waste order, but as all the prior orders have been, simply one designed to furnish markets to those having none. They insist that these pretended proration, but in reality reduction, orders are invalid, (1) because not authorized by the Statute they pur-

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17,231,183 M. C. F. Of this total 225 wells produce sour gas, and these wells have a total open-flow potential of 2,099,985 M. C. F. daily. In the oil producing belt there are 2,527 oil wells producing from 27 different pools.

Development throughout the Panhandle Field has long since proved it to be the largest known reserve of natural gas in the United States. The demand for gas for light and fuel uses was local and was relatively small, prior to 1926.

The construction of pipe lines began in January, 1926, when the Northern Texas Utilities Company started transporting gas to towns in northern Texas, the principal one of which was Wichita Falls. In July of 1927, the Lone Star Gas Company started running gas in Northern Texas, principally into Ft. Worth and Dallas. In the early part of 1928, the South Plains Pipe Line Company and the Cities Service Gas Pipe Line Company started transporting gas from this field, the former into towns south of Amarillo in West Texas and the latter to Kansas City, Missouri. In June of that year the Canadian River Gas Company began transporting gas into Colorado, principally into the cities of Denver and Pueblo. In November of that year Texas Panhandle Gas Company began using its line to transport gas into Oklahoma and to Wichita, Kansas. There was relatively little development by pipe lines from this time until June of 1931, when the Panhandle Eastern Pipe Line Company began transporting gas through its line as far as Indianapolis, Indiana.

In October of 1931, the Texoma Natural Gas Company began its operations. The gas transported by this line was carried to markets in Nebraska, Iowa, and Illinois, the principal market being Chicago and its vicinity. In May of 1932, the Northern Natural Gas Company began its operations in which it transported gas into Nebraska and Iowa, principally into the towns of Des Moines, Iowa, and Minneapolis and St. Paul, Minnesota.

port to administer, and (2) because they take plaintiffs' property without due process of law, and deny them the equal protection of the laws in violation of the Fourteenth Amendment to the Constitution of the United States and of Secs. 16, 17 and 19 of Article 1 of the Constitution of Texas.

As to the Statute, they complain of it as violative of the constitutional provisions above invoked only if it be held to support the orders. Their complaint on this score is gen-

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The total length of these nine major pipe lines approximates 4,425 miles, and the total capacity thereof is approximately 1,000,000,000 cubic feet of gas per day. A daily average of approximately 300,000,000 cubic feet of gas was transported from the Panhandle Field through these lines during the year 1933 and a daily average of approximately 400,000,000 cubic feet of gas was being transported through said lines during the year 1934; and the daily average amount being transported there through at the present time is approximately 450,000,000 cubic feet.

These major pipe line companies acquired and now hold under lease approximately 850,000 a-res of land, which is about 61 per cent of the total gas producing area in the Panhandle Field, each such company separately owning and operating its own leases. Of the total area proven productive of sweet gas these major companies own approximately 80 per cent. They have not and are not taking or transporting sour gas through their lines. Unless such gas is treated, it is not suitable for light, fuel and domestic uses. The demand for sour gas for light and fuel uses is restricted to isolated lease purposes.

Six or seven of the major pipe line companies have produced and transported to the markets gas produced from only their own gas leases (or the leases of their respective affiliated or subsidiary companies), and have not purchased gas from other lease owners in the field. Prior to and since the passage of said Act, many of the un-connected lease owners have repeatedly endeavored to induce those companies to purchase gas from their lands, but without avail. Some of these companies have been and are willing to purchase gas ratably in the field, if all the others would do so, and two companies have made thirty (30) new connections and are taking ratably from these connections.

In addition to the major pipe lines there are ten addi-

eral, it goes not merely to the particular scheme, but to any scheme of proration the Commission may devise. Their insistence is that no scheme of allocation or proration which is designed to and will curtail complainants' production, and by preventing their taking their own gas, compel them to buy from adjoining well owners can be constitutionally applied against them. They insist that the proof is clear and abundant, in fact, it is admitted, that from the begin-

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tional pipe lines of lesser capacities serving local towns and cities in the immediate vicinity of the field, with a throughput capacity of approximately only 65,000,000 cubic feet of gas per day. For the most part, these small pipe lines companies own their own leases and supply their requirements therefrom, although some of them purchase some of their requirements from other lease owners. Nevertheless, a very large number of separately owned leases have remained without connections with market outlets. In fact, there are more than 90 gas wells that have never had a connection. The pipe line companies, large and small, have taken up all the markets economically and practically available for sweet gas from the Panhandle Field, and their control thereof constitutes a virtual, if not an actual, monopoly of said markets.

The policy of most of the pipe line companies operating in this field to take gas from only those wells which they owned, to the exclusion of the other operators in the field has resulted in a protracted controversy between them and those operators in this field without a market. This controversy resulted in the passage by the Legislature of the State of Texas of a number of bills, all of which had as their purpose the protection of the right of those operators to sell their gas. In 1931 the Forty-second Legislature passed what is known as the Common Purchaser Act. This law required that pipe line companies taking gas in the State should be considered as a common purchaser and should take gas ratably under conditions which should be prescribed by the Railroad Commission of Texas. As a result of this Act the Railroad Commission issued orders which had the effect of requiring the distribution of the markets of the pipe line companies among the various producers in the field in proportion to the daily openflow potentials of the wells owned by those producers. This law

ning they have conducted their operations prudently and without waste, and have taken for their use only a small part of what they own. Especially do they insist that the [fol. 187] orders are partial and unjust as to them, for not only have they not injured their neighbors by excessive takings in proportion to their holdings but they have themselves been greatly victimized by the excessive, exorbitant, and wasteful takings, far in excess of their ownership, of

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was attacked by several of the gas pipe line companies in the United States District Court for the Western District of Texas and the Statute and the Orders of the Railroad Commission issued thereunder were stricken down.

As a result of the failure of the Common Purchaser Act, the Second Called Session of the Forty-second Legislature passed an Act which provided that the Railroad Commission should determine the market demand for any particular field, and should allocate the production in this field among the various producers to meet this market demand. The Orders entered by the Railroad Commission as a result of this Act were again attacked by the same pipe line companies in the United States District Court for the Western District of Texas and were stricken down.

As a result of the failure of these Legislative attempts to obtain ratable production, there was passed by the First Called Session of the Forty-third Legislature a bill known as the Stripping Law or the Sour Gas Bill. This bill, in effect, gave to the Railroad Commission the power to permit the use of natural gas for any beneficial purpose. Before the passage of this bill, it had been the policy of the Railroad Commission to permit the use of casinghead gas only in stripping operations, but after its passage, the Railroad Commission began issuing permits to strip dry natural gas. As a result of the issuing of these permits, a number of gasoline plants were built and began to operate in the field.

During the fall of 1933 and the year 1934, five gasoline extraction plants were built and began operations. In addition, most of the gasoline plants which had been operating entirely on casinghead gas were converted into stripping plants. As a result of these developments, by the fall of 1934, in excess of one billion cubic feet of gas was being blown into the air daily. These operations so rapidly de-

well owners from whom the orders in question, if enforced, will compel plaintiffs to buy back their own gas already diverted from under their land.

In subordination to this general complaint, and only in the event it be not sustained, plaintiffs complain of the order in the particulars to which it has descended in providing the proration scheme, as not in accordance with the Statute it purports to rest on, and also as violative of the constitutional provisions already invoked. The particulars of which they complain are that in the purported effort to comply with the Legislative direction [4] for fixing the daily allowable for each gas well in a common reservoir, the respondents have departed from it and have unjustly, unfairly and unreasonably fixed their allowable. They have fixed it by arbitrarily disregarding factors the Statute fixed

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pleted the gas field that it soon became evident that some other solution of the problem must be obtained. Hence, in the spring of 1935, the Forty-fourth Legislature passed a comprehensive conservation Statute known as House Bill No. 266, the purpose of which was to prevent waste and compel ratable production."

Note 4. Sec. 13; "In determining the daily allowable production for each gas well the Commission shall take into account the size of the tract segregated with respect to surface position and common ownership upon which such gas well or wells are located; the relation between the daily producing capacity of each gas well and the aggregate daily capacity of all gas wells producing the same kind of gas in the same common reservoir or zone; and all other factors which are pertinent; provided that the Commission shall not take into account the size of the tract upon which any gas well or wells are located in excess of the efficient drainage area of such well or wells, producing at twenty five per cent (25%) of the daily productive capacity, which drainage area shall be determined by the Commission. In ascertaining the drainage area of a well, the Commission shall take into account such factors as are reflected in the productive capacity of a gas well, including formation pressure, the permeability and porosity of the producing formation, and the well bore's structural position, together with all other factors taken into account by a reasonably prudent operator in determining the drainage area for a gas well."

as controlling, and arbitrarily selecting a standard or basis [fol. 188] having no reasonable relation either to the legislative directions or to the physical situation. Instead of taking into account, as the Statute requires, the size of the tract, its producing capacity and the actual drainage area of each well, the Commission has arbitrarily fixed the drainage area of each well in the Eastern Panhandle Field at 160 acres, in the Western Panhandle Field at 640 acres, and has fixed the allowable of each well by an arbitrary formula allowing 50% based on the potential of the wells, and 50% based not on the real drainage area, but on the acreage the Commission has arbitrarily assigned to each well. (2) It has made this more arbitrary by extending this formula of acreage influence to tracts very much smaller in size, thus allowing tracts held in smaller acreage ownership a greatly larger proportionate production than tracts like complainants, held in large ownership.

Respondents insist that the Statute and the orders must be looked at and construed in the light of the conditions of wasteful use existing especially in the sour gas area where gas was being stripped when the Statute was enacted, and in the light of the present inability of many well owners for want of light and fuel markets, to make use of their gas. They declare that every intendments should be indulged in favor of their validity, since the public interest in the conservation of gas as a natural resource of the State, the existence of wasteful conditions in portions of the Panhandle Field when the Statute was enacted, and the power of the State, through the Commission, to put a stop to wasteful practices, are beyond question. They urge that the Legislature having these conditions in mind, intended and by the Act has provided for, proration of production not only to prevent waste, but also to bring about a condition which will enable owners of wells in the field having no [fol. 189] markets, to get their gas to market through selling it to those who have. They point to the Commission's finding and order that a waste condition exists in the Panhandle Field which requires proration of production, and to the proof they offered here to support it. They point to the admitted fact that there are wells in the sweet gas area of each of the Panhandle zones which under the present Statute restricting the use of that gas for light and fuel have no outlet for their gas, unless complainants and other

pipe line companies will buy it from them. They insist that the order must be sustained both on the ground that it has a reasonable relation to the prevention of waste in the field generally, and on the ground that apart from waste it is valid as a "correlative rights" measure, a measure for the protection of well owners who under the Statute as it now stands will have no market for their gas, unless complainants and others be compelled to buy from them. Complainants on their part insist that it appears beyond question from the recitals in the Commission's order and from the evidence in the record, that as to them the order was not designed for, it has no relation, to the prevention of waste. That it was designed for, relates to, and effects only the dedication of plaintiffs' markets and facilities to the wishes and needs of well owners having none, by instituting indirectly a scheme of compulsory purchase.

On the preliminary hearing we were of the opinion and so wrote, that the Statute in question was a waste Statute. That it had not attempted, except in connection with and as a part of waste prevention, to authorize the proration of production. We held further that if the Legislature meant to say that without regard to questions of waste persons who had provided themselves with markets should, merely [fol. 190] because other well owners had none for their gas, be prevented from taking their needs from them, the law would on its face be a class law, unjust and partial. We held that designed as it would be to take the property of one class to devote it to the use of others, it would constitute a taking of property without due process, a denial of the equal protection of the laws. On that hearing the idea was advanced, by those who appeared on the side of the Commission, but in actual representation of those whose wasteful uses the present law forbids, that the Legislature wished to prohibit the use of gas for wasteful purposes but was unwilling to do so except upon the condition that these persons be supplied markets for the permitted use. That in order to placate those whose wasteful uses it had forbidden, the Legislature had enacted a law designed to supply them with markets by compelling those having facilities and markets, to buy from them. We rejected that contention. It is not, as we understand it, reurged.

We held also that the proof tended to, if it did not wholly, overthrow the claim that the order was a real waste order, looking toward and having a reasonable relation to waste prevention. We thought the order as to plaintiffs was, as the orders enjoined in the three previous cases had been, merely orders having the purpose and result to accomplish the unlawful end, of in effect expropriating the property of one and forcibly giving it to the use of others. On this hearing a vast amount of testimony was offered, illuminating the actual physical conditions in the entire field. A considerable part of it consisted of opinion evidence more or less expert; opinion evidence as to practical facts and conditions which could be checked and rechecked with the physical conditions observed in the field. This opinion evi- [fol. 191] dence, in most particulars indeed as to the controlling, the real points in the case, was on the whole without conflict. There was in addition some opinion evidence offered in the case on the ultimate question tendered for trial and decision, that is, whether the orders bore any just or reasonable relation to the prevention of waste, in the sweet gas field. These opinions were of an order of proof having little if any probative force, because no more than speculation, surmise and conjecture, the opinion of witnesses on the ultimate fact for decision, a kind of evidence universally held insufficient to constitute proof. Miller vs. United States, 71 Fed. (2d) 361; United States vs. Spaulding, 293 U. S. 498; United States vs. Bass, 64 Fed. (2d) 467; United States vs. Sauls, 65 Fed. (2d) 886; United States vs. Harris, 79 Fed. (2d) 341; Peoples Petroleum Producers vs. Smith, 1 Fed. Supp. 361.

A careful consideration of the record as it relates to waste in the Panhandle Field as a whole leads us to these conclusions; (1) Before the going into effect of House Bill No. 266 grossly wasteful practices were going on in parts of the field with the result that enormous quantities of gas were wasted. (2) No substantial evidence was offered, indeed, it was not even seriously claimed, that anything complainants had done or contemplated doing has, in the slightest degree, contributed or will contribute to that waste. The Statute as it now exists prohibits the use of sweet gas, except for light and fuel. As regards these uses it is undisputed that there has not been, there is not now, and in reasonable probability there will not be, at least at any

time in the near future, any waste, for the demand for these uses is not only limited but in supplying it, on account of the nature of the uses, only the most prudent and non-wasteful practices may be, are being and will be employed. The only kind of gas plaintiffs have is sweet gas. The pro- [fol. 192] ration order as to them was as to such gas. As to gas for these uses, there is not, there never has been, a real market in the field, for except for a small quantity consumed in operating wells and plants, gas for this use is not sold in the field. It is transported on contracts to distant points for delivery at the burner tips. The Commission's proration order was therefore based not upon market demand in the field, but upon the amount required by plaintiffs and other pipe lines for supplying their customers at distant points. Their allowable was designedly fixed at a point sufficiently below their full needs such as to require their filling these needs from wells without markets.

(3) In view of these facts, there is no credible evidence to justify the conclusion that as applied to these complainants, the restriction of their production below their absolute needs was in the slightest related to the prevention of waste gas, or as to them, would have any reasonable purpose or effect whatever, except to furnish a market for those whose prior wasteful uses of gas the Legislature now prohibits. We therefore reject, as without basis in the record the claim of respondents that the orders must be sustained as waste measures, enacted to prevent waste with an eye single to the performance of that duty and function, and find instead that they are orders enacted to bring about a compulsory purchase upon the theory of protecting correlative rights.

We come then, to defendants insistence vigorously urged upon us, that we erred in our former opinion in holding that the Statute did not authorize the Commission, upon considerations alone of providing markets for gas well owners without them, to effect marketing arrangements between those who had and those who had not markets, by ordering [fol. 193] the amount of the required production from wells having markets, to be prorated over all gas wells in the field. We are not shaken in that opinion. We think it quite clear that the Legislature did not seek to exert such power. In deference, however, to the elaborate attack of respondents

upon that ruling, and their urgency and insistence that we reconsider it, we will set out more fully our reasons for thinking so.

(1) The plain terms of the Act, in their own light, in the light of the history of the regulation for conservation, of oil and gas and of the particular conditions under which it was passed, make it abundantly clear that this Act is designed to implement the Commission in dealing with the glaring and patent waste problems which the Panhandle and other gas fields presented. The declaration of policy contains nothing to bear out the claim that independent of waste prevention, the Legislature was instituting a new rule of property in Texas. What we said in Canadian River Gas Co. vs. Terrell, 4 Fed. Supp. 226; as to the gravity and seriousness of the problem involved in such an attempt to change the laws and that an intention to do so would not be lightly imputed to the Legislature, applies to this Statute. Its declaration of policy does not declare that the Statute was enacted to declare and define correlative rights, to compel one having markets to share them with another, to create a new rule of property, and authorize the Commission to ascertain and settle, without judicial intervention, rights in a gas field. It simply declares that in recognition of past, present and imminent evils occurring in the production of natural gas as the result of waste in the production and use thereof, in the absence of correlative opportunities of owners of gas to produce and use the same, it was enacted for the purpose of prohibiting waste and compelling ratable production.

[fol. 194] Section 10 couples the adjustment of correlative rights with the prevention of waste, and Section 11 specifying the conditions under which the power granted shall be exercised, still couples them. Nowhere in the Act is there any provision which in terms or by reasonable construction, can be construed as authorizing the Commission to prorate production, waste apart, on considerations of sharing markets. This we think is the necessary, the inescapable construction of the Act, if all constitutional questions are laid aside. When its construction is approached in the light of constitutional limitations, the conclusion is further compelled that the Statute was not intended to have, it cannot be given, the meaning respondents contend for.

It is the duty of courts to give a constitutional, rather than an unconstitutional, construction to a Legislative act, to give it a meaning if its terms permit of it, which does not put it in opposition to the fundamental law. That principle applied here imperatively demands that we reject the construction respondents insist upon, for that construction would place the Act in direct and fatal opposition to both State and Federal Constitutions.

It is significant to note that in not a single case of the many cited by respondents, had the attempt been made to exert the power of regulation by way of forcing one to buy from another. In every one of them the question of the rights of owners in a common pool has come up in connection with, and only in discussion, of a waste measure. In every case where the question of correlative rights has come up, it has been discussed collaterally. In every case the spearhead of the State's thrust has been its conservation powers, its right, in the public interest, to conserve its natural resources. What the courts have said of correlative rights has been said incidentally. It has come up in connection with a discussion of the consequences and effect of [fol. 195] waste, and the right to prevent those consequences. In contending otherwise respondents, we think, misread the cases. In no case in Texas, except in this case, and the Canadian River case supra, has the question of the power of regulation, for the sole purpose of preserving correlative rights, been raised. In Brown vs. Humble Oil Co., 83 S. W. (2nd) 935, a leading Texas case, correlative rights were discussed in connection with a waste statute and order. The whole jurisdiction in that case was grounded on a waste statute. It was exerted as a part of the duty to prevent waste. Considerations of preventing waste has been the genesis of every gas and oil law passed on by every court which has been cited to us or which we have found. The Ohio Oil Case, 177 U. S. 190 on which respondents place their main reliance, was of precisely that kind. Putting to one side all questions of the difference between the rules of property in gas and oil in Indiana and in Texas, and taking that case at its fullest value for respondents, it decided nothing but that in the interest of waste prevention, the complete wastage of the gas by popping it into the air, the Legislature could control gas production to the extent of preventing its being used as a gas lift for oil. What was

said about correlative rights was said only incidentally. The real decision is found in this supposition and its vigorous denial.

"It is certain, if there can be no authority exerted by law to prevent the waste of the entire supply of gas and oil, or either, that the power which exists in every one who has the right to bore from the surface and tap the reservoir involves, in its ultimate conception, the unrestrained license to waste the entire contents of the reservoir, by allowing the gas to be drawn off and to be dispersed in the atmosphere, and by permitting the oil to flow without use or benefit to any one."

[fol. 196] This denial all subsequent courts have sustained.

Lindsey vs. Natural Carbonic Gas Co. 220 U. S. 72, on which respondents especially rely, illustrates the point. There as particularly shown in the New York decisions on which that opinion was based, Hathorn vs. Natural Carbonic Gas Co. 194 N. Y. 326, and People vs. New York Carbonic Acid Gas Co. 196 N. Y. 421, the validity of the statute was expressly grounded upon the authority of the State to prevent the waste of its natural resources. On page 73 it is said:—

"The courts of New York construed this provision not as prohibiting the specific acts absolutely or unqualifiedly, but only when the mineral waters are drawn from a source of supply not confined to the lands of the actor, but extending into or through the lands of others, and then only when the draft made upon that source of supply is unreasonable or wasteful, considering that there is a coequal right in all the surface owners to draw upon it. In other words the court, by processes of interpretation having its approval, read into the provision an exception or qualification making it inapplicable where the waters are not drawn from a common source of supply, and also where, if they be drawn from such a source no injury is done thereby to others having a like right to resort to it."

So Walls vs. Midland, 254 U. S. 300, after all of the discussion was over and done, came to the same point, the court saying, on page 313:

"The question in the case is, as we have said, whether the legislation of Wyoming is a valid exercise of the police power of the State and brings into comparison the limits of the power as against the asserted rights of property, whether the legislation is a legal conservation of the natural resources of the State, or an arbitrary interference with private rights."

Discussing the Indiana case, which respondents say was not a waste case, the court said of it:

"The suit was by the State, and was based upon a statute which was directed against and prohibited one having possession or control of any natural gas or oil well, to permit the flow of gas or oil to escape into the air. From the standpoint of the law, to do so was a waste of gas. A right against the statute was set up, based upon the asserted or implied postulate that the owner of the land owned all beneath the surface and all that could be brought to the surface within the lines of the land. The postulate was rejected upon the ground of the nature of the gas, the [fol. 197] capability of its flow from place to place, the common right to domestic and industrial use of it and the power of the State to regulate and conserve such right." * * *

"It was hence decided that the power of the State can be manifested for the purpose of protecting all the collective owners by securing a just distribution, to arise from the enjoyment by them of their privilege to reduce to possession, and to reach the like end by preventing waste."

In People vs. Associated Oil Co. 294 Pac. 717, affirmed as Bandini vs. Superior Court, 284 U. S. 8 is an interesting and complete discussion of the question of the relation of waste and correlative rights. Of the Ohio Oil Co. case, the leading case on the power of a State to prevent waste by the escape of natural gas, the Court said:—

"There is considerable discussion in that case concerning the protection necessary to be accorded the correlative rights of adjoining landowners in the same field, and the petitioners herein seek to confine the holding of the Supreme Court in that case to the protection, under the exercise of the police power, of those correlative rights. But

the holding in that case cannot be so limited. The decision in that case defines the so-called correlative right not necessarily as a right to a fixed distributive or proportional share of the oil and gas underlying the surface, which no other owner of soil overlying the same reservoir may take and use beneficially but as a coequal right to take whatever of the oil and gas can be captured, so long as waste, as defined by the statute, is not committed."

This is the substance and the effect of all the Legislative acts and of the decisions of the courts to which we have been directed. As far as we are advised no Legislature has yet enacted a law, no court has yet construed one, which in the interest solely of securing to each his rightful share of oil or gas in a common pool or reservoir, has in a comprehensive and complete way undertaken to provide machinery for determining and securing these rights and for fixing the takings of each owner from the reservoir in accordance therewith. We do not say that no Legislature can [fol. 198] do this. We do not say because it is a new kind of exertion of police power, it must be held to be beyond the scope of it.

"The police power of a State, in a comprehensive sense, embraces its whole system of internal regulation, by which the State seeks not only to preserve the public order and to prevent offenses against the state, but also to establish for the intercourse of citizens with citizens those rules of good manners and good neighborhood which are calculated to prevent a conflict of rights, and to insure to each the uninterrupted enjoyment of his own so far as it is reasonably consistent with a like enjoyment of rights by others." Cooley on Constitutional Limitations, p. 572, quoted in People ex rel. N. Y. El. Lines Co. vs. Squire, 107 N. Y. 593-605.

By force of this doctrine it may be that by a complete, a comprehensive scheme which, consistent with due process, considers and has due regard for the rights and equities of all, the Legislature of Texas may be able to provide by law for an equitable ascertainment, partitioning and fixing of them so that each could take only what was thus determined to be his own. We do not say that it cannot do this. We say merely that it has not done so. We say that House

Bill No. 266 cannot be said to have either this object or this effect. In the first place, it considers only wells actually drilled. No cognizance is taken of the great amount of undrilled territory. In the second place, even as to wells already drilled, it makes no provision for a definite and final ascertainment, partition, and setting aside to each owner of the amounts he is entitled to draw from the reservoir. It provides merely for a temporary, and therefore arbitrary allocation to each well owner of a part of the contract market of some of them. The evidence makes it plain that complainants have been taking gas in an orderly fashion, and in a total far less than under any equitable theory of measurement would be apportioned to them, while some of those in whose interest under the notion of correlative rights the orders seek to administer the Act, have been taking it exorbitantly, disproportionately and wastefully. No provision is made in the Act for taking into account these [fol. 199] and many other matters which must be considered if any equitable and fair distribution between adverse interests is to be attempted.

In addition, if the Act be construed as intended to appoint the Commission as a body to ascertain and partition rights of oil and gas owners, it would be a palpable and direct violation of Sec. 1 Art. 2 of the Constitution of the State of Texas, in that, contrary to that provision, it would be an attempt to delegate to the Commission both legislative and judicial powers, leaving to it at will by regulations of its own devising, to take from one and give to others, rights in property. A roving commission of this kind, to undo and set up, to take away and restore, the property rights of the people, may not be thus delegated. Board of Water Control vs. McKnight, 229 S. W. 301; Dockery vs. State, 247 S. W. 408; City of San Antonio vs. Zogrieb, 70 S. W. (2d) 333. c/f Panhandle Co. vs. Highway Comm. 294 U. S. 613.

Because of the view we entertain and have expressed, that the Commission is entirely without power under the Act to prorate plaintiffs' production on a theory of correlative rights, because there are no waste conditions in the sweet gas area, it is equally without power to prorate it on the theory of waste, we find it unnecessary to consider or decide the subordinate questions complainants raise on the orders. On the view we take of the case before us the par-

ticular formulaes the Commission has now adopted, the particular bases it has assumed for its proration, are unimportant. The evidence makes out a case for relief because it is plain, so that all may see, that under the statute as it now exists there are no waste conditions in the sweet gas area which the order is designed to or will remove or affect; but masked under the guise of regulation it is the exercise of coercion to take from one to give to another.

[fol. 200] The force of government in America may not be exerted to bring about such partial, such unjust effects.

"Recognizing the difficulty in defining with exactness the phrase "due process of law" it is certain that these words imply a conformity with natural and inherent principles of justice, and forbid that one man's property or right to property shall be taken for the benefit of another, or for the benefit of the State, without compensation." Holden vs. Hardy, 169 U. S. 390.

"Justice is the bond of men in states, and the administration of justice, which is the determination of what is just, is the principle of order in political society." The Politics of Aristotle, p. 5 (World's Great Classics).

"Justice is the end of government; it is the end of civil society. It ever has been and ever will be pursued until it be obtained, or until liberty be lost in the pursuit." The Federalist, No. 50.

"Governments have in general but two means of overcoming the opposition of the people they govern, viz: the physical force which is at their disposal, and the moral force which they derive from the decisions of the courts of justice." * * *

"The great end of justice is to substitute the notion of right for that of violence, and to place a legal barrier between the power of the government and the use of physical force." DeTocqueville, "Democracy in America" p. 138.

This is the principle of Democracy in America; the spirit of its laws.

The Fifth and the Fourteenth Amendments to the Federal Constitution, and Art. I Sec. 17 of the Texas Constitution, are based upon a recognition of this principle. Because they are, though they do not operate to prevent the reasonable and just exercise of the police power of the

State, they do limit its exertion within just and reasonable bounds.

"The police power of a State, while not susceptible of definition with circumstantial precision, must be exercised within a limited ambit and is subordinate to constitutional limitations. It springs from the obligation of the State to protect its citizens and provide for the safety and good order of society. Under it there is no unrestricted authority to accomplish whatever the public may presently desire. It is the governmental power of self protection and permits reasonable regulation of rights and property in particulars essential to the preservation of the community from injury." Panhandle Company vs. Highway Comm'n. 294 U. S. 613.

"Vague, shadowy, and shifting though the limits of this power sometimes appear to be, it is settled that in the exercise of the police power a state may take, damage, or destroy private property without compensation when the pub- [fol. 201] lic necessity, the public health, or the public safety require it to be done. Because, however, these limits are shadowy, vague and apparently shifting, it is in the last analysis for the courts to say whether questioned action has properly called into being the exercise of the power, and whether the power is being exercised reasonably and within the limits of public necessity. Spann vs. City of Dallas, 111 Tex. 357; Peoples Petroleum Producers vs. Sterling, 60 Fed. (2d) 1041; Pennsylvania Coal Co. vs. Mahon, 260 U. S. 393." Hulen vs. City of Corsicana, 65 Fed. (2d) 969.

This controversy has been long drawn out. In varying forms under different statutes, but always to the same purport and effect as to these complainants, order after order has been drawn, enjoined, and drawn again. This is the fifth time this Court has written. Texoma Natural Gas Co. vs. R. R. Comm. 59 Fed. (2d) 750; Texoma Natural Gas Co. vs. Terrell, 2 Fed. Supp. 168; Canadian River Gas Co. vs. Terrell, 4 Fed. Supp. 222; Texas Panhandle Gas Co. vs. Thompson, 12 Fed. Supp. 462. From none of these decisions was an appeal taken.

If the principles on which we have proceeded have been wrongly taken, this should be determined by an appeal.

Continued litigation of these questions in the trial court will not settle them. Contested matters of this kind should be settled, litigation should be brought to an end.

A decree for complainants in accordance with this opinion may be settled and filed.

[File endorsement omitted.]

[fol. 202] In United States District Court for the Western District of Texas, Austin Division

No. 539. In Equity

Consolidated Gas Utilities Corporation, Complainant,

vs.

Ernest O. Thompson et al., Defendants

Final Decree—Filed April 30, 1936

On the 2nd day of January, A.D. 1936, came on for final hearing and trial before a Court of Three Judges duly convened in this court in accordance with the provisions of Section 380, Title 28, U. S. C. A. the bill of complaint and application for injunction of Consolidated Gas Utilities Corporation, a corporation, complainant in the above styled and numbered cause, the defendants having appeared and answered herein, and then came all the parties and announced ready for trial. After hearing the pleadings of complainant and defendants and after hearing the evidence offered by complainant and by defendants, and after hearing oral arguments by counsel for the respective parties, the Court requested both sides to file briefs in support of their respective contentions, and said briefs having been prepared and delivered to the Judges of the Court, the Court, after fully considering the pleadings, evidence, oral arguments and briefs submitted, on the 30th day of March, 1936, filed with the Clerk of this Court a written opinion sustaining complainant's right to the relief hereinafter granted in this decree.

[fol. 203] It is Therefore Ordered, Adjudged and Decreed by the Court that the order of the Railroad Commission of Texas, dated December 10th, 1935, purporting to fix

the allowable production of natural gas from gas wells in the East Panhandle District of Texas, and the schedules accompanying such order fixing the quantities of gas which complainant should be permitted to produce from its several gas wells situated in the East Panhandle District of Texas, and all subsequent orders and schedules thereafter issued by the Railroad Commission of Texas to the same purport and effect, be and the same are annulled and held for naught as against complainant; and the defendants, Ernest O. Thompson, C. V. Terrell and Lon A. Smith, members of the Railroad Commission of Texas, and William McCraw, Attorney General of Texas, their successors in office, deputies, assistants, agents, employees, subordinates, clerks, attorneys, and each of them, and all other persons acting or purporting to act in their place or stead or under or through their authority, be and they are hereby jointly and severally perpetually restrained and enjoined from enforcing or attempting to enforce against complainant in any manner, by order, suit or otherwise, directly or indirectly, any of the provisions of said order of the Railroad Commission of Texas promulgated on December 10, 1935, in so far as the same purport to limit the production of gas from complainant's wells located in the East Panhandle District of Texas to the purported market demand as determined by the Railroad Commission of Texas, and from enforcing or attempting to enforce against complainant any other rules or regulations of like purport and effect; and said defendants and each of them, together with their respective successors and representatives as above set forth, are hereby perpetually restrained and enjoined from instigating or instituting any proceeding or suit to inflict, impose or enforce any fine, penalty, forfei-
[fol. 204] ture or punishment as against complainant, Consolidated Gas Utilities Corporation, for violation of such order or orders.

The interlocutory injunction heretofore granted on the application of complainant pending further orders of this Court having been succeeded by this decree of perpetual injunction, it is Ordered that said interlocutory injunction be and the same is hereby dissolved and set aside, and complainant and its bondsmen are discharged from all liability on the bond for interlocutory injunction filed under order of the Court in granting such interlocutory injunction.

It is Further Ordered, Adjudged and Decreed that the defendants pay all costs lawfully incurred herein, and that complainant have judgment for all costs by it paid or advanced in this cause.

And now come the defendants by their attorneys of record and in open court except to this decree and give notice of appeal to the Supreme Court of the United States; and defendants at the same time request the Court to consolidate this cause with the companion cause, styled Texoma Natural Gas Company vs. Ernest O. Thompson et al., No. 550 in Equity. It appearing to the Court that this cause and the cause last mentioned are companion cases; that the same evidence was introduced in both cases; that they involve substantially the same issues; and that the appeal in each of said cases will be expedited if they be consolidated so that there will be no duplication of the record:

It is Ordered that for the purposes of appeal this cause be and the same is hereby consolidated with the cause styled Texoma Natural Gas Company vs. Ernest O. Thompson et al., No. 550 In Equity.

[fol. 205] Entered this 30th day of April, A. D. 1936.

(Signed) J. C. Hutcheson, Jr., United States Circuit Judge. (Signed) T. M. Kennerly, United States District Judge. (Signed) Robert J. McMillan, United States District Judge.

[File endorsement omitted.]

[fol. 206] In United States District Court for the Western District of Texas, Austin Division

No. 550. In Equity

Texoma Natural Gas Company, Complainant,

vs.

Ernest O. Thompson et al., Defendants

Final Decree—Filed April 26, 1936

On the 2nd day of January, A.D. 1936 came on for final hearing and trial, before a Court of Three Judges duly

convened in this court in accordance with the provisions of Section 380, Title 28 U. S. C. A. the bill of complaint and application for injunction of Texoma Natural Gas Company, a corporation, complainant in the above styled and numbered cause, the defendants having appeared and answered herein, and then came all the parties and announced ready for trial. After hearing the pleadings of complainant and defendants and after hearing the evidence offered by complainant and by defendants, and after hearing oral arguments by counsel for the respective parties, the Court requested both sides to file briefs in support of their respective contentions, and said briefs having been prepared and delivered to the Judges of the Court, the Court, after duly considering the pleadings, evidence and oral arguments and briefs submitted, on the 30th day of March, 1936, filed with the Clerk of this Court a written opinion sustaining complainant's right to the relief hereinafter granted in this decree.

It is Therefore Ordered, Adjudged and Decreed by the Court that the order of the Railroad Commission of Texas [fol. 207] dated December 10th, 1935, purporting to fix the allowable production of natural gas from gas wells in the West Panhandle District of Texas, and the schedules accompanying such order fixing the quantities of gas which complainant should be permitted to produce from its several gas wells situated in the West Panhandle District of Texas, and all subsequent orders and schedules thereafter issued by the Railroad Commission of Texas to the same purport and effect, be and the same are annulled and held for naught as against complainant; and the defendants, Ernest O. Thompson, C. V. Terrell and Lon A. Smith, members of the Railroad Commission of Texas, and William McCraw, Attorney General of Texas, their successors in office, deputies, assistants, agents, employees, subordinates, clerks, attorneys, and each of them, and all other persons acting or purporting to act in their place or stead or under or through their authority, be and they are hereby jointly and severally perpetually restrained and enjoined from enforcing or attempting to enforce against complainant in any manner, by order, suit or otherwise, directly or indirectly, any of the provisions of said order of the Railroad Commission of Texas promulgated on December 10, 1935, in so far as the same purport to limit

the production of gas from complainant's wells located in the West Panhandle District of Texas to the purported market demand as determined by the Railroad Commission of Texas, and from enforcing or attempting to enforce against complainant any other rules or regulations of like purport and effect; and said defendants and each of them, together with their respective successors and representatives as above set forth, are hereby perpetually restrained and enjoined from instigating or instituting any proceeding or suit to inflict, impose or enforce any fine, penalty, forfeiture or punishment as against complainant, Texoma Natural Gas Company, for violation of such order or orders.

[fol. 208] The interlocutory injunction heretofore granted on the application of complainant pending the further orders of this Court having been succeeded by this decree of perpetual injunction, it is Ordered that said interlocutory injunction be and the same is hereby dissolved and set aside, and complainant and its bondsmen are discharged from all liability on the bond for interlocutory injunction filed under order of the Court in granting such interlocutory injunction.

It is Further Ordered, Adjudged and Decreed that the defendants pay all costs lawfully incurred herein, and that complainant have judgment for all costs by it paid or advanced in this cause.

And now come the defendants by their attorneys of record and in open court except to this decree and give notice of appeal to the Supreme Court of the United States; and defendants at the same time request the Court to consolidate this cause with the companion cause, styled Consolidated Gas Utilities Corporation vs. Ernest O. Thompson et al., No. 539 in Equity. It appearing to the Court that this cause and the cause last mentioned are companion cases; that the same evidence was introduced in both cases; that they involve substantially the same issues; and that the appeal in each of said cases will be expedited if they be consolidated so that there will be no duplication of the record:

It is Ordered that for the purposes of appeal this cause be and the same is hereby consolidated with the cause

styled Consolidated Gas Utilities Corporation vs. Ernest O. Thompson et al., No. 539 in Equity.

[fol. 209] Entered this 26th day of April, A. D. 1936.

(Signed) J. C. Hutcheson, Jr., United States Circuit Judge. (Signed) T. M. Kennerly, United States District Judge. (Signed) Robert J. McMillan, United States District Judge.

[File endorsement omitted.]

[fol. 210] IN UNITED STATES DISTRICT COURT

No. 539. In Equity

No. 550. In Equity

[Title omitted]

Findings of Fact and Conclusions of Law—Filed May 4, 1936

In Compliance with Rule 70½, the fact findings and law findings are here separately stated, such findings applying to both cases, which are consolidated for the purpose of appeal.

FINDINGS OF FACT

1

Plaintiff, Consolidated Gas Utilities Corporation, is a Delaware corporation with a permit to do business in the State of Texas, and acquired all of the properties of the Texas Panhandle Gas Company, original plaintiff, and was [fol. 211] duly substituted as plaintiff and in lieu of the Texas Panhandle Gas Company in cause No. 539 in equity. The plaintiff, Texoma Natural Gas Company is a Delaware corporation with a permit to do business in the State of Texas. Defendants, Ernest O. Thompson, C. V. Terrell and Lon A. Smith compose the Railroad Commission of Texas, which is an administrative body created by the laws of the State of Texas, and charged with the duty of promulgating regulations pursuant to and enforcing the statute of the State of Texas relative to oil and natural gas. The defend-

ant William McCraw is the duly elected and qualified Attorney General of the State of Texas.

2

There is a diversity of citizenship between plaintiffs and each of the defendants. The amount in controversy in each of said causes exceeds the sum of $3,000.00, exclusive of interest and cost. The issues involved herein relate to the alleged unconstitutionality of House Bill 266, 44th Legislature of Texas, Regular Session, Chapter 120, Vernon's Annotated Civil Statutes of Texas, Article 6008 as amended, and the order of the Railroad Commission of Texas promulgated thereunder. Said causes, therefore, arise under the Constitution and laws of the United States.

3

The order of the Railroad Commission dated December 10th, 1935, and as carried forward in supplemental orders, divided the Panhandle gas field into two zones, designated respectively as the East Panhandle field and the West Panhandle field. The East Panhandle field consists of the gas producing portions of Wheeler County and the eastern part of Gray County, Texas. The West Panhandle field consists of Hartley, Moore, Hutchinson Potter, Potter Carson and the western part of Gray.

[fol. 212] 3½

Complainants are engaged in producing natural gas in the Panhandle oil and gas field and transmitting such gas to markets outside the State of Texas.

4

The Panhandle oil and gas fields is an enormous reservoir of natural gas and oil situated in the Panhandle of Texas. It extends from the southeastern portion of Wheeler County in a northwesterly direction across the Counties of Wheeler, Gray, Carson, Potter, Hutchinson, Moore and a portion of Hartley a total distance of approximately 125 miles. In width it varies from 10 miles to 40 miles. The oil and gas is found in folds or strata laid down on the slopes of an ancient granite mountain range, now sub-

merged, extending throughout the length of the field and lying generally on the southwestern side thereof. Some saturated formations are found on the southwestern slope of the old mountain range, but most of the oil and gas producing formations lie on the northeastern slope. The saturated formations descend with the slopes of the mountains to sea level and below. Those portions of the porous formations lying at approximately sea level and below are saturated with water, originally under a reservoir pressure of approximately 430 lbs. per square inch. Just above the water the formations are frequently found to be saturated with oil. Due to the irregularity in the formations, the oil saturated portions of the formations are not continuous throughout the length of the field; but oil pools, numbering 50 or more, occur at irregular intervals along most of the northeast edge of the reservoir. Structually above the oil and in the same formations enormous quantities of free natural gas are found. This gas is sometimes found in a number of strata in the same well; and free gas is often found in wells drilled to the oil bear- [fol. 213] ing formations, this gas being deposted in porous strata above the oil and separated from the oil bearing stratum by impervious lenses. Near the edge of the reservoir oil is found in wells in which no free gas is found in strata above the oil, but gas is found in solution with the oil and when produced with the oil is known as casinghead gas.

5

Gas was first discovered in this field about the year 1919. No extensive developments took place until about the year 1925, when some of the oil pools were discovered. Since the discovery of oil 3,000 wells have been drilled, the great majority of which have been drilled on the northeastern half of the reservoir. The oil and gas when originally encountered were under the same reservoir pressure as the water, and there is free communication between the portions of the formations bearing water, oil and gas respectively. Due to underground natural physical conditions and to the drilling of wells, there is extensive communication between different saturated strata allowing the migration of gas, oil and water from one stratum or layer to another, as well as up and down structure in the same stratum.

6

Along the north and west sides of the western portion of the field gas is found to be contaminated with sulphur compounds and is known as "sour" gas. To the south and east of the area producing sour gas, the gas is free of sulphur compounds and is known as "sweet" gas. There is no physical barrier between those portions of the formations producing sweet gas and sour gas and there is free migration of gas from the sweet gas area to the sour gas area, and vice versa. The line of demarkation between the areas producing sweet and sour gas is known locally as the sour gas line.

[fol. 214]

7

The entire reservoir embraces approximately 1,400,000 acres. The area producing free gas embraces approximately 1,174,000 acres, of which approximately 270,000 acres produces sour gas and approximately 904,000 acres produces sweet gas. By a north-south line in the so-called Lefors area in eastern Gray County, the Railroad Commission has divided the reservoir into zones or fields, that lying to the east of the line being known as the East Panhandle Field and that to the west as the West Panhandle Field. The area producing free gas in the East Panhandle Field embraces about 181,000 acres, and that producing free gas in the West Panhandle Field about 993,000 acres. The dividing line between the east and west fields or zones is situated in an area of much lower pressure than that of the areas to the east and west thereof. Consequently, there is no migration from the West Panhandle Field to the East Panhandle Field, or vice versa, though there is migration of gas from both these fields into the low pressure areas embracing the dividing line. No complaint is made in this case of this division of the field into zones. All of the sour gas area is in the West Panhandle Field. The sweet gas area in the West Panhandle Field, therefore, contains about 723,000 acres.

8

During the earlier history of the field there was no outlet for any substantial quantity of natural gas and the development was intensified in and around the oil producing areas.

No particular value was placed on the gas in these earlier years and deplorable waste of gas occurred in connection with the production of oil. As a consequence of intensive development in the oil fields and the heavy production of gas from oil wells, low pressure areas soon appeared in all [fol. 215] the oil fields. A number of these low pressure areas assumed large proportions, among which might be mentioned the Borger area, the Skellytown area, the Lefors area, and the Wheeler County oil field areas. In addition to these low pressure areas caused from operations in the oil fields, other low pressure areas have been formed during the past two or three years due to intense production of gas in concentrated areas for delivery to stripping plants, where the gas was processed for the recovery of a small quantity of natural gasoline, the residue being popped off or wasted to the air. These last mentioned low pressure areas are for the most part contiguous to or in close proximity to the low pressure areas resulting from operations in the oil fields, and the result is that the entire north side of the field now has very low pressure in comparison with the remainder of the field, the pressure graduating from 50 to 150 lbs. along the northeast or structurally low portion of the field, to the original pressure along the southwestern or structurally high portion of the reservoir. This condition has resulted in the migration of tremendous quantities of natural gas from the southwestern side of the field to the northeastern side of the field. Many of these areas of low pressure are situated in the sour gas producing area, with the result that tremendous quantities of sweet gas have moved out from the sweet gas area into the sour gas area. Upon moving into the sour gas area, this sweet gas becomes blended with sour gas and is produced as sour gas. Without treatment to remove the sulphur compounds, sour gas is unfit for use as fuel for heating and lighting purposes, its use being confined at this time principally to the manufacture of carbon black.

9

Due to the low reservoir pressure and to the formational resistance to the flowing in of water, no hydraulic drive is exerted by the water found below the oil and gas in the [fol. 216] same formations. The water, therefore, does not flow in to replace the oil and gas produced at a sufficiently

rapid rate to rebuild the pressure to any perceptible degree. In wells drilled to water the water will rise to varying heights in the well bore, the height to which it will rise depending upon the existing reservoir pressure in the immediate vicinity of the well. When the pressure was approximately at the original 430 pounds per square inch, the column of water would rise about 1000 feet in the well bore. As the pressure is exhausted through the production of oil and gas, the height to which the column of water will rise gradually diminishes. This condition renders the Panhandle field free of the hazards of water coning, water channeling and trapping off of oil and gas as a result of too rapid production of oil or gas, which sometimes occur in fields in which an active water drive is present. The only damage that has occurred from the encroachment of water in this field has been that caused from local saturation of formations originally containing oil or gas by water that has come into the bottom of the well and risen in the well bore due to mechanical errors and defects in the drilling, completion and operation of wells.

10

This field is situated in a thinly populated section of the country. There is no market outlet for sweet gas within the field itself except for fuel in the drilling of wells and in the operation of industries incident to the oil and gas business. Prior to the year 1928 no sweet gas was being sold outside the field except to supply the industrial and domestic needs of the city of Amarillo and smaller towns in the immediate vicinity of the field. About the year last mentioned several groups of individuals and corporations, some of whom already owned extensive reserves of sweet gas in the field, commenced the development of pipe line [fol. 217] projects looking to the production of natural gas from this field and transmitting it to distant markets, most of which were located in the so-called Central West, outside the State of Texas. Among these groups were the founders of complainants. Those interested in the organization of complainant Texoma Natural Gas Co. acquired and transferred to complainant approximately 261,000 acres of leases in the proven field. Some of these leases have been released to the land owners; but complainant now owns more than 200,000 acres of leases known to be capable of

producing sweet gas. These extensive reserves were acquired and are now held by complainant in order to assure an adequate supply of sweet gas for transmission through its pipe lines to its markets in the city of Chicago and intermediate points. These reserves represent an investment by complainant of approximately $13,000,000.00. At the time of the trial it had drilled about 90 wells on its leases and had constructed a main pipe line from the town of Fritch, in southwestern Hutchinson County, Texas, to a point near the town of Gray, in the State of Oklahoma. It had also constructed a compressor plant at the town of Fritch and had constructed gathering lines connecting its main line with its wells, at an additional cost of several million dollars. An affiliated company, The Natural Gas Pipe Line Company of America, had constructed a large trunk pipe line from the town of Gray, Oklahoma, to Joliet, Illinois, near the city of Chicago, at a cost of more than $35,000,000.00. This affiliated company and Texóma together have expended more than $500,000.00 in efforts to secure market outlets and marketing contracts for complainant's natural gas. The total investment of complainant and its affiliated company, whose interests constitute one general project, is more than $72,000,000.00. Those inter- [fol. 218] ested in the organization of complainant, Consolidated Gas Utilities Company, acquired and transferred to complainant leases and leasehold interests in approximately 10,273.53 acres in the East Panhandle field. On these leases complainant and its predecessors in interest drilled twelve wells, situated on leases aggregating 1473.63 acres, out of three different sections of land. These reserves were acquired and are now held by complainant in order to assure an adequate supply of sweet gas for transmission through its pipe lines to its markets in the cities of Hutchinson and Wichita, in the State of Kansas, and intermediate points. In addition to acquiring its leases and drilling the twelve wells, complainant has constructed a main pipe line leading from a point near its producing leases in Wheeler County, Texas, to the city of Enid, Oklahoma, and on to the cities of Hutchinson and Wichita in the state of Kansas, and has constructed gathering lines connecting its wells with said main pipe line. It has also constructed branch lines leading from its main pipe line to intermediate cities and towns, in which it is selling and

distributing gas. Its total investments in its leases, pipe lines and connections aggregate more than $10,000,000.00. In addition to these sums complainant has expended substantial amounts in conducting negotiations for the marketing of its gas at points outside the State of Texas. As a practical matter, it would have been most difficult, if not impossible, for complainants and their affiliated company to finance the building of their pipe lines, compressor plants and other essentials of their project unless complainants had acquired their reserves of gas so as to place them at all times in position to insure the delivery of gas for transmission through the pipe lines as rapidly as markets could be developed; and the development of their markets would have been almost, if not quite, impossible had not complain- [fol. 219] ants and their affiliated company been in position to guarantee delivery of the full quantity of gas desired by their customers as needed.

11

Natural gas cannot be stored as can most other commercial commodities. It can be delivered to the ultimate consumer only by pipe lines connecting the wells at the source of supply with the burner tips of the consumers. For this reason it is necessary that there be a continuous flow of gas available from the wells to the points of consumption.

12

The circumstance that gas cannot be stored or transmitted to markets except by pipe lines and the enormous cost of pipe lines over the distances between the Panhandle gas field and centers of population combine to bring about a situation where there is no field market for any substantial quantity of sweet gas. Natural gas is in competition with other fuels, such as coal, fuel oil, and coke oven gas, and the development of markets is attended with protracted negotiations involving heavy costs. These negotiations culminate in private contracts for the sale and purchase of natural gas, in the case of complainant Consolidated, at points distant from the Panhandle. Most of these private contracts are performable by complainant at the cities of Enid, Oklahoma, Hutchinson, Kansas, and Wichita, Kansas, and other cities and towns between the city of Enid Oklahoma, and

the city of Wichita, Kansas. In the case of complainant Texoma, most of these private contracts are performable by complainant and its affiliated company near the city of Chicago, Ill. This complainant is producing gas and transmitting it through its pipe line to Gray, Oklahoma, where it is delivering this gas to its affiliated company under a written contract of sale and purchase. Since these contracts form the basis of complainant's outlet for its reserve of [fol. 220] natural gas, and will enable complainant to produce and sell great quantities of gas from its reserves of natural gas, much of which would otherwise be lost to complainant through drainage to low pressure areas, these contracts constitute very valuable property to complainant.

13

In addition to the pipe lines of complainants and their affiliated companies other pipe lines have been constructed for the purpose of transmitting gas from the Panhandle field to distant centers of population. These include pipe lines to Kansas City, Missouri, and intermediate points; to eastern Indiana and intermediate points; to Denver, Colorado and intermediate points; to St. Paul and Minneapolis, Minnesota, and intermediate points; to cities in North Texas and to the city of Lubbock, Texas. Three of these pipe lines acquired their reserves in the East Panhandle field, and the remaining six, including complainant acquired their reserves in the West Panhandle field. All together the owners of these pipe lines own about 80% of all the reserves of sweet gas, in the field, and about 62% of all the gases, including both sweet and sour gas, contained in the reservoir.

According to the estimates of a competent engineer, whose estimates were not contradicated, the formations underlying complainant Consolidated leases as of October 1, 1935, aggregated about 101,900,000,000 cubic feet of gas. At the time of the trial, which was in midwinter, complainant was producing and marketing from its twelve wells about 25,000,000 cubic feet of gas daily. The orders attacked limited the production from complainant's wells to less than half of its total market outlets. The average production through the year from complainant's wells is about 19,000,000 cubic feet daily. The maximum percent which

[fol. 221] complainant has taken from any one well has been 12.9% of its potential open flow. The average taken from all its wells from the beginning has been 4.89% of the potential open flow. The highest percent of the daily potential ever taken over a period of one month for the entire twelve wells has been 6.53%. Complainant has recovered from its twelve wells a total of 45,214,776,000 cubic feet of gas an average of 4,490,000 cubic feet per acre from its entire leases, and an average of 30,620,000 cubic feet per acre from the 1473.53 acres on which its twelve wells are located.

According to the estimates of competent engineers, the original reserves of free gas in the West Panhandle field aggregated about 14,986,752,696,000 cubic feet measured at an assumed absolute pressure of 16.4 lbs. to the square inch. Of this approximately 11,309,091,686,000 cubic feet was sweet gas, and 3,667,661,000,000 cubic feet was sour gas. Approximately 20% of the total reserves of gas, including both sweet and sour, in the West Panhandle field originally underlay the leases now owned by complainant. At the time of the trial of this case the production from the West Panhandle field had aggregated 4,427,642,131,000 cubic feet. Of this total the pipe lines, with an ownership of 56% of the total reserves, have produced only 529,545,454,000 cubic feet, while the owners of the other 44% have produced 3,898,096,776,000 cubic feet. Complainant, with an ownership of approximately 20% of the total reserves, had produced only 98,808,409,000 cubic feet, or 2.25% of the total withdrawals from the West Panhandle field.

15

The leases and reserves owned by the pipe lines, including those owned by complainant, are located in the sweet gas area on relatively high structural positions. Most of the [fol. 222] other gas wells and all of the oil wells are located on lands lying between the reserves of the pipe lines and the northeast or structurally lower edge of the reservoir.

16

On their reserves and leases the pipe lines have drilled 293 wells in the West Panhandle field. Those owning other leases in the West Panhandle field have drilled 180 wells producing sweet gas and 211 wells producing sour gas, or a

total of 391 wells. The leases on which the wells owned by the pipe lines are located aggregate 523,063.97 acres, an average of about 1785 acres per well. From these developed leases they have produced a total of 529,545,454,000 cubic feet of gas, or an average of 1,157,000 cubic feet per acre. Complainant's 90 producing wells are located on developed leases aggregating 81,928.44 acres, an average of 911 acres for each well, and have produced a total of 98,-808,489,000 cubic feet, or an average of 1,312,000 cubic feet per acre. The 180 sweet gas wells in the West Panhandle field not connected to pipe lines are located on leases aggregating 30,096 acres, an average of 167 acres per well. These wells have produced a total of 418,652,466,000 cubic feet or an average of 13,900,000 cubic feet per acre. The 211 sour gas wells are located on leases aggregating 33,750 acres, an average of 159 acres for each well. These wells have produced a total of 496,635,182,000 cubic feet an average of 14,700,000 cubic feet per acre.

17

The average rock pressure of the 293 sweet gas wells in the West Panhandle field owned by the pipe line companies, at the time of the last official test prior to the trial, was 364.5 lbs per square inch of the 201 wells connected to [fol. 223] pipe lines in the East Panhandle field 315 lbs per square inch. The average rock pressure of complainant's 90 producing wells was 336.8 lbs per square inch. That of the 180 sweet gas wells in the West Panhandle field, not connected to the pipe lines, was 233 lbs per square inch, and that of the 211 sour gas wells was 220 lbs per square inch.

The average for the 121 wells not connected to pipe lines was 222 lbs per square inch. The average for the 391 wells in that field not connected to pipe lines was 226 lbs per square inch. These 391 wells in the West Panhandle field not connected to the pipe lines are practically all located between the 293 wells belonging to the pipe lines and the low pressure areas along the northeast side of the reservoir. By reason of these differentials in pressure between the wells connected to pipe lines and those not connected, the migration or drainage as a whole is from the wells connected to pipe lines, including those connected to complain-

ant's pipe lines, to the wells not connected to pipe lines. All along the northeast slope of the structure in the East Panhandle field there is an extremely low pressure area, where tremendous quantities of gas have been produced in connection with the operation of oil wells and wells connected to stripping plants. The general drainage in the East Panhandle field is from the areas of high pressure toward and to these low pressure areas. The majority of the wells not connected to pipe lines are situated in these low pressure areas, or between these low pressure areas and the high pressure areas to the south and west thereof, in which areas of higher pressure the wells connected to the pipe lines are situated. The twelve wells of complainant are situated near the areas of low pressure, and the rock pressure of these wells and of other wells similarly situated [fol. 224] with reference to the low pressure areas tends to show that had complainant not produced its market requirements from these 12 wells they would probably have substantially the same rock pressure as now obtaining, due to the heavy migration from the areas in which these wells are situated to the low pressure areas immediately to the northeast thereof. Very large quantities of gas have migrated from the reserves of the pipe lines, including the reserves of complainants, to the low pressure areas in and around the oil fields on the northeast slope of the reservoir and to the areas on which most of the 391 wells belonging to others than the pipe lines in the West Panhandle field are situated. Without regard to the rate of withdrawal in the existing areas of low pressure, the migration of gas from the reserves of the pipe lines to those areas of low pressure will continue over a long period of time.

18

322 gas wells have been drilled in the East Panhandle field. Of these 201 wells are connected to pipe lines, 105 have been connected to stripping plants, and 16 were not connected to any outlet at the time of the trial except in some instances for the purpose of supplying fuel to drilling wells. The leases on which the wells connected to pipe lines are located have produced an average — 8,116,000 cubic feet of gas per acre, and those on which the wells connected to stripping plants are located have produced an average of 16,662,000 cubic feet per acre.

19

The 201 wells in the East Panhandle field connected to pipe lines are scattered and distributed throughout practically the full length of the field. The 121 wells not connected to pipe lines are similarly distributed, though often in more concentrated areas, and practically all of these [fol. 225] wells, lie between the wells of the pipe line companies and the low pressure areas resulting from oil field and stripping operations or lie within such low pressure areas.

20

The fact that 105 wells in the East Panhandle field not connected to pipe lines have been produced at a much higher rate than have the wells in that field connected to pipe lines, and that 16 wells in that field have never been produced, has caused no coning or channeling of water into the formations saturated with oil or gas, or the trapping off by water of recoverable oil or gas, nor has the quantity of gas ultimately recoverable been reduced by reason of such unequal rates of withdrawal. No underground waste of oil, gas or reservoir energy has resulted from such unequal withdrawals.

21

The orders attacked restrict the production from gas wells situated in the sweet gas area of the West Panhandle field, embracing 723,000 acres of land, to 602,000,000 cubic feet daily for the month of January, 1936. The total allowable production is the volume which resulted from adding the combined market outlets of those who are producing and marketing natural gas, most of which are the distant markets of the pipe lines, made up of private marketing contracts as above stated. The orders require that the total volume of allowable production be apportioned among all of the wells producing from the sweet gas area, 293 of which belong to the pipe lines, and 180 of which belong to other owners.

22

In the orders of the Railroad Commission no provision is made for and no account is taken of the leases belonging to the pipe lines or others on which no wells have been

[fol. 226] drilled; nor is any provision made for or account taken of producing acreage included within large leases in excess of 640 acres in the West Panhandle, and 160 acres in the East Panhandle for each well.

22

The consumers' demand for natural gas varies greatly from season to season and substantially from day to day, the demand going up in cold weather and down in warm weather. To meet this situation the pipe lines which obligate themselves to deliver gas at distant points must provide themselves with facilities to enable them to deliver the maximum consumer requirements; and when these consumer requirements decrease with changing weather conditions, a portion of the facilities for transmitting the gas are not used. This circumstance requires the owners of pipe lines to make larger investments in their transportation facilities than would be necessary to transport the same quantity of gas to market during the year if the consumers' demand were constant from day to day.

23

The owners of wells connected to pipe lines, including complainants have always produced their wells in a prudent and skilful manner and in accordance with the most approved methods of production, without committing or causing physical waste. At the time of the trial, which was mid-winter, complainant was producing its wells at the rate of about 10% of their daily potential producing capacity. The average for the pipe lines in the West Panhandle field as a whole was substantially less. This average throughout the year has been and will be substantially less than the average at the time of the trial of this case. About 151 of the 180 sweet gas wells not connected to pipe lines have been producing at rates greatly in excess of the rate at which the pipe lines' wells have been produced. [fol. 227] These 151 wells, located on 19,669 acres, have produced an average of 21,300,000 cubic feet per acre, whereas the 293 wells connected to the pipe lines have produced only 1,157,000 cubic feet per acre. 61 of these wells were formerly oil wells and have produced large quantities of gas along with the oil. 29 of the 180 wells not connected to pipe lines have never produced. Practically all of these 29 wells

are located in areas where the reservoir pressure has been reduced by oil field and stripping operations to levels much lower than the average reservoir pressure of complainant's wells and the other wells connected to pipe lines.

24

The 293 wells in the West Panhandle field connected to pipe lines are scattered and distributed throughout practically the full length of the field. The 180 wells not connected to pipe lines are similarly distributed, though often in more concentrated areas, and practically all of these wells lie between the wells of the pipe line companies and the low pressure areas resulting from oil field and stripping operations or lie within such low pressure areas.

25

The fact that 151 wells not connected to pipe lines have been produced at a much higher rate than have the wells connected to pipe lines, and that 29 sweet gas wells in the West Panhandle field have never been produced, has caused no coning or chaneling of water into the formations saturated with oil or gas, or the trapping off by water of recoverable oil or gas, nor has the quantity of gas ultimately recoverable been reduced by reason of such unequal rates of withdrawal. No underground waste of oil, gas or reservoir energy has resulted from such unequal withdrawals.

[fol. 228] 26

The production from their own wells by complainant and other pipe lines of the quantity of gas required from time to time to fulfill their marketing contracts and requirements will cause no coning or channeling of water, no trapping off of recoverable oil or gas, no underground waste of oil, gas or reservoir energy or reduction of the total quantity of recoverable gas from the field, even though the other wells in the sweet gas area of the West Panhandle field be produced at a much lower rate or be not produced.

27

Before House Bill 266 went into effect, grossly wasteful practices in the production of natural gas in the Panhandle field were occurring, with the result that enormous quanti-

ties of gas were wasted. Most of this waste was due to the extravagant production of natural gas from oil wells and to the production of gas from gas wells and processing such gas for the extraction of a very small quantity of natural gasoline therefrom and popping or wasting to the air the residue gas, which constituted 97% of the fuel value of the gas in its original state. The production of gas from oil wells has been practically without restriction throughout the history of the field. The production of gas by those who were stripping it of its natural gasoline content and wasting it to the air has been at a tremendously greater rate than the production of gas from wells connected to pipe lines. No evidence was offered—indeed, it was not even seriously claimed—that anything complainant had done or contemplated doing has, in the slightest degree, contributed or will contribute to that waste.

28

Under the orders attacked, it is impossible for complainant and several other pipe lines owning wells and leases in the Panhandle field to supply their marketing requirements and contracts from their own wells. The drilling of [fol. 229] additional wells will not cure this situation, for the reason that so long as there are wells in the same field not connected to pipe lines and the total production is limited to the total market outlets, substantially all of which are the private marketing contracts and commitments of the pipe lines, and this production is distributed among all the wells, including those not connected to pipe lines, complainant and the other pipe lines similarly situated will be unable to supply their marketing contracts from their own wells. In order to comply with their marketing contracts and commitments, complainant and others similarly situated will be required to purchase gas from the owners of the wells in the field not connected to pipe lines, notwithstanding the pipe lines have an abundant supply of their own gas to fulfill all their marketing contracts and commitments.

30

The terms and provisions of the orders attacked, the necessary operation and effect of such orders, the history of the field and other pertinent facts as disclosed by this record conclusively establish that the purpose of the Com-

mission underlying the orders was, upon a theory of protecting correlative rights to coerce complainant and other similarly situated to buy gas from, and thus to share their private marketing contracts and commitments and the use of their pipe lines and other facilities for transmitting their gas to market with, the owners of wells not now connected to pipe lines, who have not contributed in money, services, negotiations, skill, forethought or otherwise to the development of such markets and the construction of such pipe lines and other facilities. In short to compel complainants to afford markets to those having none.

31

The necessary operation and effect of such orders is to take from complainant and others similarly situated sub- [fol. 230] stantial and valuable interests in their private marketing contracts and commitments and in the use of their pipe lines and other facilities for transmitting their gas to their markets, without compensation, and to confer same upon the owners of the approximately 180 sweet gas wells in the field not connected to pipe lines.

CONCLUSIONS OF LAW

1

The statutes attacked are waste statutes. The Legislature did not intend by this statute to authorize the Railroad Commission of Texas to prorate or limit the production of natural gas except for the purpose of preventing waste as defined by the act. In the event it should become necessary for the Railroad Commission to issue orders prorating or restricting the production of gas in order to prevent waste, the provisions of the statute under attack pertaining to correlative rights require the Commission to adjust the allowable to each owner so as to enable each owner to recover a quantity of gas substantially equivalent in amount to the recoverable gas under his land, and to limit the owner of a smaller tract to his just proportion of the gas produced.

2

Since nothing complainant had done or contemplated doing has, in the slightest degree, contributed or will contri

ute waste as defined by the statute, and since the restriction of complainant's production to a quantity below its absolute needs in the fulfillment of its market requirements was not, in the slightest degree, related to the prevention of [fol. 231] waste, the orders attacked cannot be sustained as waste measures, but must be held invalid as applied to complainant's wells.

3

The orders under attack transcend public necessity and are confiscatory as applied to complainant, for which reason they are invalid as applied to complainant's wells.

4

The underlying purpose of the Railroad Commission in issuing and attempting to enforce the orders attacked as shown by the effect of the orders is not to prevent waste, but to coerce complainant and others similarly situated to provide markets and marketing facilities for others.

5

If, by the enactment of the statutory provisions under attack, the Legislature of Texas intended to empower the Railroad Commission to issue and enforce orders limiting and prorating the production of gas except for the purpose of preventing waste as defined in the statute, the Act and orders attacked are invalid and unenforceable as against complainant for the following reasons:

(a) Their necessary operation and effect is to confiscate, without compensation, complainant's private markets, developed by it as a means of disposing of its own gas reserves, and devote them to others, who have no interest in such markets and who have contributed nothing to their development.

(b) Their necessary operation and effect is to confiscate the use of complainant's pipe lines and other facilities for transmitting their gas to market, which it has constructed at enormous cost, as a private enterprise, for transmitting its own gas to its own private markets, and, without compensation, to devote it to the use of those who have no in- [fol. 232] terest in same and who have contributed nothing to the construction or cost of such facilities.

(c) Their necessary operation and effect is to prevent complainant from protecting itself, to the extent that it is able to market its gas, against the enormous losses by drainage now occurring, and which will continue to occur, from its leases located in areas of high pressure to existing low pressure areas.

(d) They serve no public interest.

They operate, therefore, to confiscate and take from complainants its property and the use of its property without due process of law, and deny complainant the equal protection of the law, in violation of the Fourteenth Amendment to the Constitution of the United States, and of Sections 16, 17 and 19, of Article I, of the Constitution of Texas, to deprive complainant of its liberty and its property, in violation of the impairment of contracts clause of Section 10, Article I, of the Constitution of the United States, and to take, damage and destroy complainant's property for a purported public, but in fact private, use, without compensation and without complainant's consent, in violation of Section 17, of Article I, of the Constitution of Texas.

6

Under the established laws of Texas, the correlative rights of persons owning lands or leases in a common source of supply of natural gas are the right to produce and the right to use all the gas that may be produced from their respective tracts so long as such production and use do not cause waste. House Bill 266 does not purport to create any new rule of property in Texas or to redefine the correlative rights of owners of lands within a common source of supply of natural gas as they have long been declared and defined. While this is the inescapable con- [fol. 233] struction of the Act if all constitutional questions are laid aside, we hold that, if its construction be approached in the light of constitutional limitations, the conclusion is further compelled that the statute was not intended to have and cannot be given the meaning for which respondents contend, to the effect that the Act should be construed as authorizing the Commission to prorate production, in the absence of waste, on the mere consideration of compelling the owners of private market outlets

and facilities for transmitting gas to market to share them with those not interested in same.

7

Under a well established rule, we are required to give the legislative act under attack a construction that would render it constitutional rather than unconstitutional, to give it a meaning, if its terms permit it, which does not put it in opposition to the fundamental law. This principle imperatively demands that we construe the statute as we have construed it; for any other construction would place the Act in direct and fatal opposition to both the State and the Federal Constitutions, as heretofore stated. In addition, if the Act be construed as intended to appoint the Commission as a body to ascertain and partition rights of oil and gas owners, it would be in palpable and direct violation of Section 1, Article II of the Constitution of Texas, in that, contrary to that provision, it would be an attempt to delegate to the Commission both legislative and judicial powers, leaving to it at will, by regulations of its own devising, to take from one and give to others property and rights in property and the use thereof.

(Signed) J. C. Hutcheson, Jr., Judge. (Signed) T. M. Kennerly, Judge. (Signed) Robert J. McMillan, Judge.

[fol. 234] [File endorsement omitted.]

[fol. 235] In United States District Court

No. 539. In Equity

No. 550. In Equity

[Title omitted]

Additional Findings of Fact—Filed May 4, 1936

1

The natural gas pipe lines which withdraw gas from the Panhandle gas field supply gas to many of the principal cities and towns of the United States, including Chicago,

Illinois; Des Moines, Iowa; Omaha, Nebraska; Sioux City, Iowa; Kansas City, Missouri; St. Paul, Minnesota; Indianapolis, Indiana; Denver, Colorado; Minneapolis, Minnesota, and Fort Worth and Dallas, Texas. Gas from the Panhandle gas field is supplied for domestic and industrial light and fuel purposes to approximately 10,000,000 persons of the United States. Said gas field is the largest natural gas field in the United States.

[fol. 236]

2

There are six major natural pipe line companies which withdraw gas from the West Panhandle field; and there are three major pipe line companies which withdraw gas from the East Panhandle field. In addition, there are several smaller companies which withdraw gas from said field for distribution to towns and cities which are close to said field. Practically all of the sweet natural gas which is produced from gas wells in the Panhandle field is used for the purpose of supplying the cities and towns of the United States with such gas for domestic and industrial heat and light purposes. Only an insignificant portion of the total sweet gas produced in said Panhandle field is used in the field.

3

The practical effect of House Bill 266 is to restrict the production of sweet gas from gas wells until such gas can be utilized for light and fuel purposes. Plaintiffs, and those companies similarly situated, being the pipe line companies which produce and transport gas from said field for light and fuel purposes, for all practical purposes at present constitute the only outlet in the field for sweet gas for the purposes permitted by the statute.

4

There are 517 sweet gas wells in the West Panhandle field, of which 180 sweet gas wells do not have an outlet for light and fuel purposes. There are 322 sweet gas wells in the East Panhandle field, of which 121 wells do not have an outlet for light and fuel purposes. Prior to the effective date of House Bill 266 the laws of the State of Texas permitted the use of sweet gas in the Panhandle field for any beneficial purpose where the owner of the well was

[fol. 237] not able to secure outlets for light and fuel purposes and under such laws many of the wells which are now unconnected did have an outlet for their gas, either for the purpose of extracting the natural gasoline content of said gas or for the manufacture of carbon black, or both. Upon House Bill 266 becoming effective, however, these outlets and uses were made unlawful and these wells, along with many other wells in the field which have never had connection for any purpose, became without an outlet for the purposes and uses permitted by House Bill 266.

5

The law which authorized the use of natural gas in the Panhandle field for any beneficial purpose where no outlet for light and fuel could be secured was passed in 1933. Under the operation of said law more than one billion cubic feet of gas per day produced from said Panhandle field was being wasted into the air after the gasoline content of such gas had been extracted. The enormous quantity of gas which these plants used and especially the enormous quantity of gas which was being daily allowed to escape into the air, seriously endangered the interests of those who were concerned with preserving the sweet gas reservoir for the production of gas for light and fuel purposes, including the interests of plaintiffs in these cases. Conservation associations were organized, which had for their purpose the creation of a public sentiment which would be against the continuation of the operations of natural gasoline or stripping plants which popped, or permitted the escape of, gas into the air. Texoma Natural Gas Company was a prime mover in the organization and activities of such conservation association, and said company contributed both the time of its agents and its money to foster a public sentiment which would persuade the Legislature of Texas to repeal the laws which permitted the popping off [fol. 238] or escape of natural gas in connection with stripping operations.

An investigating committee was appointed by the Senate of the Forty-third Legislature of Texas in 1933 for the purpose of investigating the conditions in the Panhandle Gas Field brought about by the operation of the laws which permitted stripping operations. This Committee held exhaustive hearings in Amarillo, Texas. In addition to hear-

ing many witnesses, a complete report of conditions which exist in the field, together with a recommendation for their solution, was submitted to the Railroad Commission of Texas by such committee. As a result of its investigations, a report was sent to the Senate of the Forty-third Legislature in which the Committee recommended that a law be enacted which would prohibit the use of sweet gas except for light and fuel purposes and which would also provide for a system of ratable production distributed among the owners of all sweet gas wells in the common reservoir. Subsequent to the adjournment of the Forty-third Legislature, the Conservation Association, which Texoma Natural Gas Company was helping to finance, persu-ded many members of the Forty-fourth Legislature of Texas to visit the Panhandle Gas Field and observe the conditions and operations which were being conducted therein. The sponsors of said visits, had for their purpose the repeal of the existing laws and the enactment of a comprehensive statute designed to remedy the evils existing in the Panhandle Gas Field. In addition, representatives of Texoma Natural Gas Company appeared before the Forty-fourth Legislature, which had the proposed gas legislation up for consideration, and advocated special legislation which would remedy the existing evils. The Committee of the House of Representatives and the Senate of the Forty-fourth Legislature, prior to the enactment of House Bill [fol. 239] 266, held extended and exhaustive hearings for the purpose of investigating the conditions which existed in the gas fields of Texas and especially the Panhandle Gas Field, and to arrive at appropriate remedies. At such hearings the representatives of all the natural gas pipe line companies, owners of producing gas wells, owners of plants which made use of natural gas, and members of the public generally were given an opportunity and did appear and give testimony before such committees.

April 30.

Approved and ordered filed.

(Signed) J. C. Hutcheson, Jr. T. M. Kennerly.
McMillan.

[File endorsement omitted.]

[fol. 240] IN UNITED STATES DISTRICT COURT

No. 539. In Equity

No. 550. In Equity

[Title omitted]

PETITION FOR ALLOWANCE OF APPEAL AND ORDER ALLOWING APPEAL—Filed May 8, 1936

To the Honorable Court Aforesaid:

Now come Ernest O. Thompson, Lon A. Smith, C. V. Terrell, composing the Railroad Commission of Texas, and William McCraw, Attorney General of Texas, defendants in the above entitled and numbered causes, same having been consolidated for the purpose of appeal, and respectfully represent and show that in said causes pending in said court the plaintiffs requested and pressed to a hearing application for interlocutory injunctions against the defendants restraining said defendants from enforcing as against the plaintiffs Chapter 120, Acts of 44th Legislature of [fol. 241] Texas, Regular Session, and certain orders of the Railroad Commission issued pursuant thereto, which are fully described and set out in the original bills of complaint filed by the plaintiffs in these causes, and which said applications for temporary injunctions were heard by three Judges in accordance with Section 380, Title 28, U. S. C. A. (Judicial Code, Section 266, amended), and said applications for interlocutory injunctions were granted by said court as so constituted against these defendants; and, thereafter, the plaintiffs requested and pressed to a hearing their further application for a permanent injunction to restrain these defendants from enforcing as against plaintiffs said statute and certain orders of the Railroad Commission of Texas, which are fully set out and described in their amended bills of complaint filed herein, and which said applications for permanent injunction were heard by a three Judge Court in accordance with said Section 380; and, thereafter, decrees of said court declaring said orders of the Railroad Commission of Texas to be void as to these plaintiffs and enjoining the enforcement thereof as against the plaintiffs herein were duly entered by the court, the date of the entry of the decree in the case of Consolidated

Gas Utilities Corporation versus Ernest O. Thompson et al., being April 3, 1936, and the date of the entry of the decree in the case of Texoma Natural Gas Company versus Ernest O. Thompson et al. being April 26, 1936, which decrees are greatly to the prejudice and injury of these petitioners, defendants herein, and are erroneous and inequitable.

Wherefore, in order that your petitioners may obtain relief in the premises and for the opportunity to show the errors complained of which are specified and set forth in the Assignment of Errors filed contemporaneously here- [fol. 242] with, your petitioners pray that they be allowed an appeal in said cause to the Supreme Court of the United States, sitting in Washington, and that citation issue and a transcript of the record, proceedings and papers upon which said decrees are based, duly authenticated, be sent to the Supreme Court of the United States, agreeably to the statutes and rules of the court in such cases made and provided.

Your petitioners further pray that proper order be made fixing the amount of the bond for costs which petitioners must give and furnish in connection with such appeal.

Petitioners submit and file herewith their assignment of errors upon said judgments and decrees.

Dated this the 6th day of May, 1936.

(Signed) Wm. McCraw, Attorney General of Texas;
(Signed) Wm. Madden Hill, Assistant Attorney General, Attorneys for Defendants, the Railroad Commission of Texas and Ernest O. Thompson, C. V. Terrell and Lon A. Smith.

The above petition is hereby granted and the appeal allowed and bond on appeal is hereby fixed at One Thousand Dollars ($1000.00), said bond to be made payable jointly and severally to the plaintiffs, Texoma Natural Gas Company and Consolidated Gas Utilities Corporation, and to be conditioned as required by law.

Witness my hand this the 8th day of May, 1936.

(Signed) Robert J. McMillan, United States District Judge.

[fol. 242a] [File endorsement omitted.]

[fol. 243] IN UNITED STATES DISTRICT COURT

No. 539. In Equity

No. 550. In Equity

[Title omitted]

ASSIGNMENT OF ERRORS—Filed May 8, 1936

Now come Ernest O. Thompson, C. V. Terrell and Lon A. Smith, composing the Railroad Commission of Texas, and William McCraw, the Attorney General of Texas, defendants in the above entitled causes, said causes having been heretofore consolidated for the purpose of appeal and in such causes as consolidated file this, the following assignment of errors upon which they will rely in the prosecution of the appeal heretofore petitioned for in said causes from the decrees of this court entered on the 26th day of April, 1936, and 30th day of April, 1936, respectively.

1

The court erred in entering its decrees herein declaring void and unenforceable as against the plaintiffs the orders of the Railroad Commission of Texas involved herein.

[fol. 244] 2

The court erred in finding in paragraph one of the conclusions of law herein that the statute under attack herein is purely a waste statute and that the Legislature did not intend by such statute to direct the Railroad Commission of Texas to prorate or limit the production of natural gas, except for the purpose of preventing underground waste.

3

The court erred in paragraph one of the conclusions of law in holding in effect that the provisions of the statute under attack require the Commission to adjust the allowable to each owner so as to enable each owner to recover a quantity of gas substantially equivalent in amount to the recoverable gas under his land, regardless of the condition of development thereof.

4

The court erred in paragraph two of its conclusions of law in holding that the orders attacked cannot be sustained as waste measure but must be held invalid as applied to complainants' wells on the ground that the operations of complainants had not and will not contribute waste as defined by the statute, and that the restriction of the production from complainants' properties would not be related in the slightest degree to the prevention of waste.

5

The court erred in holding in paragraph two of its conclusions of law that the question of whether the complainants herein were committing waste was material to the validity of the statute and orders in quesion.

6

The court erred in paragraph three of its conclusions of law in holding that the orders under attack transcend pub-[fol. 245] lic necessity and are confiscatory as applied to the complainants, and for that reason are unreasonable and invalid as to complainants' properties.

7

The court erred in paragraph four of its conclusions of law in holding that the underlying purpose of the Railroad Commission in promulgating and enforcing the orders in question is not to prevent waste, but to coerce complainant and others similarly situated to provide markets and marketing facilities for others, and that therefore said orders are invalid.

8

The court erred in holding in paragraph five of its conclusions of law that the necessary operation and effect of the statute and orders in question is to confiscate without compensation complainants' private property and devote same to others.

9

The court erred in holding in paragraph five of its conclusions of law that the necessary operation and effect of

the statute and orders in question is to prevent complainants' protecting themselves against drainage.

10

The court erred in holding in paragraph five of its conclusions of law that the statute and orders in question serve no public interest.

11

The court erred in holding in paragraph five of its conclusions of law that the statute and orders in question operate to confiscate and take complainants' property and the use thereof without due process of law and deny complain-[fol. 246] ants equal protection of the law in violation of the 14th Amendment to the Federal Constitution and in violation of the Constitution of Texas.

12

The court erred in paragraph five of its conclusions of law in holding that the statute and orders in question operate to deprive complainants of their property in violation of the contract clause of the Federal Constitution and to take complainants' property for a private use without compensation in violation of the Texas Constitution.

13

The court erred in holding in paragraph six of its conclusions of law that under the established laws of Texas the correlative rights of persons owning lands and leases in a common source of supply of natural gas are to produce all of the gas that may be produced therefrom as long as such operations do not produce waste; and, likewise, erred in its conclusion in said paragraph that it was not the purpose of House Bill 266 to protect and adjust the correlative rights of owners of the lands within a common source of supply of natural gas.

14

The court erred in holding in paragraph six of its conclusions of law that the statute in question could be given only the construction of adjusting correlative rights as merely ancillary to the provisions as to waste, and in refusing to hold that the statute in question seeks to regulate

production for the protection of all owners in common reservoirs irrespective of waste.

[fol. 247]

15

The court erred in holding in paragraphs one and seven of its conclusions of law that the provisions of the statute in question requiring the Commission to restrict the production of wells from a common source of supply of natural gas to the market demand for such gas; and to allocate such allowable production among the various wells located in such common source of supply, relate only to the prevention of underground waste incident to such production; and, the court likewise erred in refusing to hold that the provisions of said statute with reference to the restriction of production were intended to apply whenever the total potential production of all such gas wells in such common source of supply exceeded the market demand for such gas irrespective of waste.

16

The court erred in holding in paragraph seven of its conclusions of law that if the statute under attack be not construed to be simply a waste statute it must necessarily be construed to be a statute which delegates to the Railroad Commission the power of ascertaining and partitioning rights of oil and gas owners, which would be in violation of Section 1, Article II of the Constitution of Texas.

17

The court erred in failing and refusing to find that the orders of the Railroad Commission under attack are valid and enforceable in that the operation of said orders will result in the prevention of waste as defined by the statute in question.

18

The court erred in failing and refusing to find that the statute and orders of the Railroad Commission involved herein are valid and enforceable as against complainants, [fol. 248] regardless of whether or not waste as defined by said statute is prevented by the operation of said orders.

19

The court erred in failing and refusing to hold that under the facts in evidence the complainants are not entitled to the issuance of injunctions restraining the enforcement of the Railroad Commission's orders.

20

The court erred in failing and refusing to find that complainant, Texoma Natural Gas Company, is not entitled to the issuance of a permanent injunction in its favor in view of the undisputed evidence that said complainant solicated the Legislature of Texas to enact the statute in question, or similar legislation; and in refusing to hold that in as much as the waste provisions of said statute, which were advocated by such complainant, operate to protect the gas reserves of said complainant it should not now be heard to attack the validity of the provisions of such statute or the orders of the Railroad Commission which may operate to restrict its right to produce as much gas as it desires from its wells.

21

The court erred in holding in paragraph nine of its findings of fact that there is no hydraulic drive or pressure exerted by the water found below the oil and gas in the producing formation; and in holding that the Panhandle field is free of the hazards of water coning, water channeling and trapping off of oil and gas as a result of too rapid production of oil or gas; and in holding that the only damage that has occurred from the encroachment of water in this field has been that caused from mechanical errors and defects in the drilling, completion and operation of wells; [fol. 249] all of said findings of fact being contrary to the findings of the Railroad Commission and a substantial portion of the evidence.

22

The court erred in holding in paragraph ten of the findings of fact that there is no market for sweet gas within the field itself, except for fuel in the drilling of wells and other field use.

23

The court erred in holding in paragraph ten of the findings of fact that complainant, Consolidated Gas Utilities Corporation, has constructed a main pipe line leading from its producing leases in Wheeler County to cities in the States of Oklahoma and Kansas; and, likewise, erred in holding in paragraph twelve of the findings of fact that private contracts for the sale and distribution of natural gas for domestic and industrial purposes are performable by said complainant at said points.

24

The court erred in holding in paragraph twelve of the findings of fact that the contracts of complainant, Consolidated Gas Utilities Corporation, enable it to produce and sell quantities of gas from its reserves of natural gas, much of which reserves would otherwise be lost through drainage to low pressure areas.

25

The court erred in holding in paragraph thirteen of the findings of fact that the formations underlying the leases of complainant, Consolidated Gas Utilities Corporation, as of October 1, 1935, aggregated about 101,900,000,000 cubic feet of gas.

[fol. 250]

26

The court erred in drawing the contrast between acreage owned and production therefrom by pipe lines in the West Panhandle Field and that of others set out in paragraph thirteen of its findings of fact in failing and refusing to take into consideration production prior to acquisition by such pipe line companies in view of the undisputed testimony that extensive development and production had taken place prior to the entry of pipe lines into the field, and that in the case of complainant, Texoma Natural Gas Company, enormous quantities of gas had been produced from its properties prior to acquisition thereof by it in 1931.

27

The court erred in holding in paragraphs fifteen, seven- and twenty-four of the findings of fact that leases and re-

serves owned by the pipe lines, including those owned by complainant, are located in the relatively high structural positions in the sweet gas areas, and that the other sweet gas wells in the field are located between the reserves of the pipe lines and the structurally lower edge of the reservoir, said findings being contrary to the evidence in the case.

28

The court erred in holding in paragraph sixteen of the findings that the wells owned by the pipe lines are located on leases aggregating 523,063 acres, said figures including leases which have not been developed or drilled by said pipe lines; the court, likewise, erred in its findings in said paragraph to the effect that the wells of complainant, Texoma Natural Gas Company, are located on developed leases aggregating 81,928 acres, and have produced a total of 98,808,489,000 cubic feet or 1,312,000 cubic feet per acre, said figure including some of complainant's undeveloped [fol. 251] leases and said production figures not including production from said properties prior to their acquisition by said complainant. The court erred in holding in said paragraph that the 180 sweet gas wells in the West Panhandle field are located on leases aggregating 30,096 acres, said finding not taking into account the evidence that the owners of such unconnected wells own approximately two hundred thousand acres of leases in the sweet gas portions of said field, the court having taken into account the undeveloped acreage of the pipe lines in its other findings in said paragraph.

29

The court erred in holding in paragraph seventeen that the migration or drainage in the Panhandle field is from the wells connected to pipe lines, including those belonging to the complainants, to the sweet gas wells not connected to pipe lines, for the reason that such findings are contrary to the evidence in the case.

30

The court erred in finding in paragraph seventeen of the findings of fact that the operation of and production from the twelve wells of Consolidated Gas Utilities Corpo-

ration has not lowered the pressure under the leases from which said wells are producing as well as the pressures under the leases of other operators which surround said wells.

31

The court erred in its finding of fact contained in paragraphs twenty and twenty-six to the effect that no underground waste of oil, gas or reservoir energy has resulted from unequal and disproportionate withdrawals; and in failing to hold that a direct relation exists between unequal and disproportionate withdrawals and the encroachment of water and channeling and coning thereof, resulting in a reduction of the ultimate amount of gas recovered.

[fol. 252]

32

The court erred in failing and refusing to hold that unequal withdrawals and disproportionate production from the Panhandle field will result in reduction of the amount of gas ultimately recovered from said field in the face of undisputed testimony to the effect that ratable production distributed among the gas wells now located in said field will result in greater ultimate recovery of gas than if only the wells connected to the pipe lines produce gas.

33

The court erred in holding in paragraph twenty-three of the findings of fact that the owners of wells connected to pipe lines, including complainants, have always produced their wells in a prudent and skillful manner and without committing or causing physical waste.

34

The court erred in holding in paragraph twenty-seven of the findings of fact that no evidence was offered that the complainants had done or contemplated doing anything that had or will contribute to the waste of gas in the Panhandle field.

35

The court erred in finding in paragraph twenty-eight that in order to comply with their marketing contracts and com-

mitments complainants, and those similarly situated, would be required to purchase gas from owners of gas in the field not connected to pipe lines, if such finding be construed to mean that the law or orders under attack here require complainants to buy gas from any other producer.

36

The court erred in finding in paragraph thirty that it was not the purpose of the Railroad Commission in promulgating the orders under attack to prevent waste in the [fol. 253] production of gas in the Panhandle gas field.

37

The court erred in finding in paragraph thirty that it was the purpose of the Railroad Commission to coerce complainants, and those similarly situated, to share their private marketing contracts with the owners of wells not connected to pipe lines.

38

The court erred in finding in paragraphs thirty and thirty-one that the necessary operation and effect of the orders of the Railroad Commission is to take from complainants, and those similarly situated, valuable interests and private marketing contracts and the use of their pipe lines without compensation and confer same upon the owners of the wells which are not connected to pipe lines.

39

The court erred in holding in paragraphs thirty and thirty-one of the findings of fact that the orders in question are for the purpose of requiring complainants to share markets rather than that they relate to production and operation of producing properties in the field.

40

The court erred in failing and refusing to find that the orders of the Railroad Commission in question have a reasonable relation to the prevention of underground waste as defined by the statute in question, and a reasonable relation to securing a greater ultimate recovery of gas from said field.

41

The court erred in ignoring the evidence introduced in behalf of the defendants showing that the orders of the Railroad Commission have a reasonable relation to the [fol. 254] prevention of waste as defined by the statute in question.

42

The court erred in failing and refusing to find that the operation of the statute and orders in question will prevent disproportionate withdrawals of gas in the Panhandle field.

43

The court erred in failing and refusing to find that the interest of the public in the preservation of the Panhandle gas field for light and fuel purposes, and the conditions which obtained in said field at the time the statute in question was enacted render valid the ratable production features of said statute and the orders of the Railroad Commission promulgated thereunder, even in the absence of waste.

44

The court erred in failing and refusing to find that in view of the evils which existed in the Panhandle gas field at the time the statute in question was enacted, that the Legislature had a right to adopt any measure which had a reasonable relation to the correction of such conditions and the adjustment of the rights of those who owned interests in such gas reservoirs; and in further failing and refusing to find that the statute and orders in question constituted a reasonable exercise of the police power of the State of Texas under such circumstances.

Wherefore, defendants pray that the decrees of said court be reversed and for such other and further relief as to the court may seem just and proper.

(Signed) William McCraw, Attorney General of Texas; (Signed) Wm. Madden Hill, Assistant Attorney General, Attorneys for Defendants.

[fol. 255] [File endorsement omitted.]

[fols. 256-314] Bond on appeal for $1,000.00, approved and filed May 25, 1936, omitted in printing.

[fol. 315] In United States District Court

No. 539. In Equity

No. 550. In Equity

[Title omitted]

Waiver of Citation and Notice—Filed May 15, 1936

Come now Consolidated Gas Utilities Corporation and Texoma Natural Gas Company, plaintiffs in the above numbered and entitled causes, consolidated for the purposes of appeal, by their attorneys and solicitors of record, and do hereby waive issuance and service of citation and notice of appeal as required by law, and do hereby enter their voluntary appearance in the appeal to the Supreme Court of the United States at Washington, D. C.

Dated this the 15th day of May, 1936.

Consolidated Gas Utilities Corporation, Texoma Natural Gas Company, by S. A. L. Morgan, Their Attorney and Solicitor of Record.

[File endorsement omitted.]

[fol. 316] In United States District Court for the Western District of Texas, Austin Division

No. 539. In Equity

Consolidated Gas Utilities Corporation, Complainant,

vs.

Ernest O. Thompson et al., Respondents

No. 550. In Equity

Texoma Natural Gas Company, Complainant,

vs.

Ernest O. Thompson et al., Respondents

Statement of Evidence under Equity Rule 75—Filed May 25, 1936

Be it Remembered, that on January 2, 1936, the above entitled causes came on regularly for trial before the above

Court constituted in accordance with Section 266, Judicial Code, with Honorable Joseph C. Hutcheson, Jr., Circuit Judge, and Honorable T. M. Kennerly and Honorable Robert J. McMillan, District Judges, sitting; whereupon the following appearances were entered for the plaintiffs: S. A. L. Morgan, D. H. Culton, J. J. Hedrick, Chas. H. Keffer and C. C. Mount.

[fol. 317] For the respondents: William McCraw, Attorney General of Texas, W. J. Holt, T. F. Morrow, William C. Davis, William Madden Hill, Assistant Attorneys General of Texas, C. C. Small, Charles I. Francis, A. V. Molony, and Maurice Cheek.

The following together with certain original exhibits to be forwarded is a condensed statement of the evidence, which is considered essential to the decision of the questions presented by the appeal, in which the testimony of the witnesses is stated in narrative form, except in a few instances in which part of the testimony has been reproduced in the exact words of the witnesses.

[fol. 318] PLAINTIFFS' CASE

FLOYD C. BROWN, witness for plaintiffs (Affidavit):

My name is Floyd C. Brown; I reside in Cook County, Illinois. I am Vice-President and General Manager of Texoma Natural Gas Company, a Delaware corporation organized May 26, 1930, and granted a permit to do business in Texas on June 2, 1930. I am also Vice-President and General Manager of Natural Gas Pipe Line Company of America, hereinafter called "Pipe Line Company," a Delaware corporation organized on May 26, 1930. The Pipe Line Company does not have a permit to do business in Texas and is not engaged in any business in Texas.

Texoma and the Pipe Line Company were contemporaneously promoted and organized by substantially the same persons and financial interests as necessary units in a general enterprise to produce natural gas in the Panhandle of Texas and to transport such gas to distant markets in the States of Kansas, Nebraska, Iowa and Illinois. Texoma is engaged, and will engage, in the business of owning oil and gas leases in the Panhandle of Texas, developing such leases and producing natural gas from such leases and

transporting such gas through gathering lines to a general compressor station near Fritch, Texas, and from such point through a main pipe 24" in diameter to a point near Gray, Oklahoma, where such gas is sold and delivered, and will be hereafter sold and delivered, to the Pipe Line Company. The Pipe Line Company is engaged, and will engage, in the business of transporting gas purchased by it [fol. 319] at such point near Gray, Oklahoma, through its main pipe line 24" in diameter to markets in the states above mentioned.

As early as 1929 various surveys established the fact that the volume of natural gas available in the so-called Panhandle of Texas available for fuel purposes and domestic and industrial consumption should be sufficient to serve a population of more than ten million people for 15 years or longer. The section of Texas where this area lies is sparsely settled, the entire population being about 150,000 people. Markets for such a tremendous volume of gas could not be found in a section of such sparse population. Those cities and centers of population in Texas where natural gas can be marketed in considerable quantities are located at a considerable distance from the Panhandle, most of them several hundred miles from the gas reservoir, and all of the larger cities and most of the larger centers of population have heretofore been and are now being served with natural gas from fields located much nearer to such cities than is the gas producing area in the Panhandle of Texas. These facts made it necessary to find markets outside the State of Texas in order to produce and market the gas from said Panhandle area, and various firms and corporations accordingly turned their attention several years ago to the development of markets in the states above referred to as an outlet for the natural gas available for production in the reservoir located in the Panhandle of Texas.

Realizing that there were large potential markets for natural gas in a number of large cities scattered through- [fol. 320] out the area commonly referred to as the Middle West, the promoters of Texoma and Pipe Line Company projected a plan under which they would acquire and develop extended leasehold interests in said gas producing area of the Panhandle of Texas, and produce gas from these leasehold interests and transport same to some of those cities and centers of population in the States of Kansas, Nebraska, Iowa and Illinois, with the possibility that other

lines might later be extended into Missouri, Minnesota, Wisconsin and other contiguous states where markets are available. Natural gas cannot be stored like other mineral products but must be taken directly from producing properties and transported in a continuous movement to consumers for immediate use or consumption. This fact made it imprudent and practically impossible for the promoters of Texoma and the Pipe Line Company to arrange for the capital necessary to the development of their project unless they first go into the markets above mentioned and contract in advance for the sale of a sufficient volume of gas to justify the expenditure of the tremendous sums of money required for the construction of pipe lines and the acquisition of all other necessary facilities. They could not secure definite contracts for the sale of natural gas for long periods of time in these prospective markets without furnishing to prospective purchasers positive evidence and assurance that they had acquired a sufficient volume of gas to be held in reserve to furnish a continuing, dependable supply to meet all possible needs and requirements of such [fol. 321] prospective purchasers over the period covered by purchase contracts; and also show that they were in a position to finance and construct pipe line facilities extending from their gas reserves to those prospective markets. The promoters of Texoma and the Pipe Line Company accordingly undertook, first, to acquire in said Panhandle area the large gas reserves that would be necessary for their project. Accordingly, they purchased numerous gas leases and gas rights under oil and gas leases, which vested in Texoma a determinable fee simple title to the natural gas under many different tracts of land situated in Hartley, Moore, Potter, Hutchinson, Carson, Gray and Wheeler Counties, Texas, originally embracing about 300,000 acres. Texoma still owns leases in said counties on more than 200,000 acres of land, which has been acquired at a cost to it of more than $13,000,000.00.

Having acquired this large gas reserve, the promoters began and pursued more than two years negotiations for the sale of large volumes of gas to prospective distributors and users located in the States above mentioned, especially in the City of Chicago and adjacent territory. Practically all of the cities which might be served in said States were already served by local distributing systems, which were

manufacturing artificial gas to supply domestic and industrial users. These systems represented large investments in equipment used for the manufacture of artificial gas, which equipment would have to be discarded in large part if natural gas were substituted for artificial gas. It was therefore necessary to negotiate with these companies dis- [fol. 322] tributing artificial gas and other prospective users to induce them to make the necessary changes. The cost to Texoma and the Pipe Line Company of these efforts to secure market outlets and market contracts aggregated more than $500,000.00.

As one of the results the Pipe Line Company entered into a contract with the Chicago District Pipe Line Company, which supplies gas to the Peoples Gas, Light & Coke Company, Public Service Company of Northern Illinois, and Western United Gas & Electric Company, which latter companies furnish gas in the City of Chicago and other large cities and communities in Northern Illinois. This contract requires said companies to purchase all of their requirements for natural gas in the territory north of an east and west line drawn through Peoria, Illinois, which includes Chicago, from the Pipe Line Company, the minimum amount to be delivered per day being definitely placed at 130,000,000 cubic feet after January 1, 1935, and the maximum amount to be delivered per day being 300,000,000 cubic feet from the date on which the contract becomes effective.

United Gas Service Company contracted to purchase from the Pipe Line Company all of its requirements for gas for its system in Glasco, Kansas, the amount to be taken per year being estimated at 8,000,000 cubic feet. Iowa Power & Light Company contracted with the Pipe Line Company to take all of its requirements for gas for its system in Indianola, Iowa, the amount per year being estimated at 7,200,000 cubic feet, and all of its requirements for gas for its Winterset, Iowa, system, the amount to be [fol. 323] taken per year being estimated at 13,500,000 cubic feet. Central Power Company contracted to take its requirements for gas for its system in Nebraska City, Nebraska, the amount to be taken per year being estimated at 260,000,000 cubic feet. Central States Electric Company contracted with the Pipe Line Company to take its gas requirements for its system in Greenfield, Iowa, the estimated

amount per year being 18,000,000 cubic feet, and its requirements for its systems in Knoxville and Pella, Iowa, the estimated amount per year being 10,000,000 cubic feet, and its requirements for its system in Muscatine, Iowa, the estimated amount being 170,000,000 cubic feet per year. Cedar Rapids Gas Company contracted with the Pipe Line Company to take its gas requirements for its system in Cedar Rapids, Iowa, the estimated amount being 3,800,000,000 cubic feet per year. Peoples Light Company contracted with the Pipe Line Company to take its requirements for its system in Davenport, Iowa, the estimated amount being 3,000,000,000 cubic feet per year. Iowa-Nebraska Light & Power Company contracted to take its requirements for its system in Red Oak, Iowa, the estimated amount being 80,000,000 cubic feet per year, and its requirements for its system at Shenandoah, Iowa, the estimated amount being 70,000,000 cubic feet per year. The Mineral Point Zinc Company contracted with the Pipe Line Company to take gas to serve its fuel requirements at its plant at DePue, Illinois, the estimated amount being 450,000,000 cubic feet per year. The Des Moines Electric Company contracted with the Pipe Line Company to take the requirements for its system at Oskaloosa, Iowa, the estimated amount being [fol. 324] 35,000,000 cubic feet per year.

All of the above contracts, except the Mineral Point Zinc Company contract, terminate in the months of September or October, 1946, with rights of renewal in the seller for a further period of five years in a majority of said contracts. These contracts establish a fixed and dependable market for the gas which is being produced by Texoma in the Panhandle of Texas and which will be transported through the lines of Texomas and the Pipe Line Company. They constitute the essential foundation on which the whole financial structure of Texoma and the Pipe Line Company has been built. While Texoma is not a party to any of these contracts, they were nevertheless negotiated as a part of the general plan that would enable Texoma to sell gas to the Pipe Line Company and enable the latter to buy gas from Texoma. Without these contracts neither Texoma nor the Pipe Line Company would have the necessary markets in which to sell and deliver the gas that is being produced and will be produced by Texoma. Texoma and the Pipe Line Company are undertaking to acquire additional markets,

and in the natural course of events will acquire market outlets for gas now owned by Texoma in the Panhandle of Texas and which can be produced from its leases or reserves.

After the promoters of the project had thus established that they could sell the gas which would be produced from the numerous leasehold interests owned by Texoma in the Panhandle, Texoma and the Pipe Line Company were able [fol. 325] to procure the necessary funds for the construction of the required pipe lines and other facilities and for the development and equipment of Texoma's leases for the production of natural gas. Texoma constructed a trunk pipe line 24" in diameter from a point near Fritch in Hutchinson County to a point near Gray, Oklahoma, a distance of approximately 100 miles. In addition, Texoma also constructed certain main gathering lines, also 24" in diameter, across the gas-producing areas in which it owns its leases, one of these extending approximately 40 miles from Fritch across Hutchinson, Carson and Gray Counties to a terminus south of Pampa, Texas, and the other extending for approximately 35 miles from Fritch across Hutchinson and adjacent counties to a terminus near Dumas, Moore County, Texas. From these branch lines approximately 100 miles of lateral gathering lines, consisting of 10", 8" and 6" pipe have been laid. The total investments made by Texoma in such lines, compressor station and other equipment necessary to transport gas now greatly exceeds the sum of $8,500,000.00. The Pipe Line Company has constructed a main trunk line 24" in diameter from the terminus of Texoma's line near Gray, Oklahoma, across portions of the States of Oklahoma, Kansas, Nebraska, Iowa and Illinois to a terminus at Joliet, Illinois. The total investments made by the Pipe Line Company in its trunk lines and other facilities for transporting gas now greatly exceeds the sum of $35,000,000.00.

Practically all of the gas produced by Texoma from its [fol. 326] large leasehold estate, excluding a small quantity produced in Wheeler County and sold on the leased premises to local purchasers, is immediately transported through its lines in one continuous movement in interstate commerce to the end of its trunk line in Gray, Oklahoma. The gas there received by the Pipe Line Company is immediately transported by it in one continuous movement

across the various states traversed by its trunk line to the various distributing companies already mentioned.

Texoma has never engaged in the purchase from any other producer of gas in Texas or elsewhere, and does not contemplate engaging hereafter in the purchase of gas from any other producer. Texoma already owns sufficient gas reserves to satisfy all of its requirements. It is now producing from its own reserves and will be able to continue to produce all the gas that it can sell to the Pipe Line Company, which represents its only market outlet. Texoma finds it necessary to produce and take its own gas to the extent of its market outlet to prevent such gas being drained to low pressure areas occasioned through the enormous production of gas in certain oil producing areas, which gas and oil are produced from the same general reservoir in which the Texoma's gas reserves are situated. It is also necessary for Texoma to produce the gas necessary to fulfil- its market requirements in order to justify the production and reasonable development of its leases required under the terms of its lease contracts, in order to prevent the termination of such leases. The various leases owned by Texoma vary somewhat in language, but they provide in general that Texoma may, by the payment of an [fol. 327] annual rental, which will average about 75¢ per acre per annum, postpone operations for drilling an initial well on the leased premises for a period of years, ranging in different leases from three to ten years. But these leases provide that the lease will terminate at the expiration of the primary term unless the lessee shall have begun actual drilling operations for the production of oil or gas therefrom. Under the express or implied provisions of the leases in general, Texoma is obligated to drill from time to time all of the offset wells necessary to protect the demised premises against drainage to wells producing gas on adjacent lands on penalty of forfeiture or payment of the damages sustained by Texoma's lessors. Texoma also is obligated to reasonably develop its leases. Texoma and its assignors have already drilled on leases owned by it in what is known as the West Panhandle of Texas 89 wells at a cost of $2,225,000.00, and Texoma is producing from these wells all of the gas for which it has a market. Texoma must proceed to drill more than 150 wells during the next few years

in order to protect the various leasehold estates from the danger of forfeiture at the end of their primary terms, each of which wells will cost about $25,000.00. Texoma's drilling obligations have been correlated as nearly as possible with Texoma's single market outlet, and Texoma will be able at all times to produce from the wells that must be drilled as above set out all of the gas for which Texoma can find a market. Texoma, therefore, does not need any gas [fol. 328] that may be produced by other producers in the Panhandle of Texas or elsewhere and does not desire to purchase any such gas. Indeed, Texoma cannot purchase any gas from other producers without sustaining a net loss to it through drainage to the low pressure areas of the amount paid out for any gas which it might be required to purchase.

Texoma already has invested in leaseholds in the Panhandle more than $15,500,000.00, which includes the purchase price, drilling operations and rentals. During the next few years it will be required to expend more than $3,700,000.00 in drilling and equipping wells, and additional large sums for the payment of currently accruing rentals. Texoma's entire investment in leases will be jeopardized and destroyed in large part if it be required to purchase gas from numerous other producers who may desire to produce natural gas and force Texoma to purchase it and use it in fulfilling Texoma's market outlet. If Texoma's gas reserves are lost to it as the result of forfeitures resulting from failure to drill the necessary wells to protect and develop Texoma leases, as above set out, Texoma and the Pipe Line Company will be placed in a precarious position in the future, as will also the various distributing companies in Kansas, Nebraska, Iowa and Illinois, to which the Pipe Line Company has contracted to furnish gas for the millions of people served by these distributing companies, and who must depend on them for gas with which to satisfy, not only their industrial requirements, but also their demands for heat in the winter and for the other needs of life, throughout the year. This is true because no great [fol. 329] enterprise of this character can safely rely for its supply upon thousands of small producers who have the right to operate their properties according to their own whims, and who have no obligation to sell and furnish their gas to Texoma in a continuous manner and in a sufficient

quantity throughout a long period of time, much less to correlate their drilling efforts and producing activities with the requirements of Texoma and the Pipe Line Company and the distributing companies whose systems will be reached by the trunk lines of the Pipe Line Company, and of their customers.

The Railroad Commission of Texas recently promulgated orders purporting to be pursuant to House Bill 266, enacted by the 44th Legislature of Texas, the necessary operation and effect of which orders is to limit and curtail the production of natural gas from Texoma's leases and the leases owned by other companies similarly situated, and to throw the business of Texoma and the Pipe Line Company in a state of turmoil and uncertainty. They will have no dependable supply of gas adequate to their market requirements, and it will be exceedingly difficult for them to meet the requirements of their purchasers for domestic and industrial uses, particularly in view of the fact that the consumption of natural gas, especially by domestic users, varies greatly with the changes of the weather. Again, it will be increasingly difficult for Texoma to successfully negotiate desirable contracts with other prospective purchasers of gas, for the reason that Texoma will be unable to produce evidence assuring such prospec- [fol. 330] tive purchasers that Texoma and the Pipe Line Company will at all times have available adequate natural gas to meet their market requirements. Texoma would also be put to the peril of having to go out and negotiate with other producers for part of the natural gas necessary to meet its market outlet, and it would be at the mercy of such producers in the event the latter should demand of it unreasonable terms, prices and conditions. It would be required to make heavy additional investments in more gathering lines to connect up with the wells of such other producers. Scattered throughout the area through which Texoma's pipe lines and gathering lines extend are many thousands of acres belonging to various persons who may desire to produce gas therefrom, and from whom Texoma will be required to purchase gas in order to meet its market requirements, if the Railroad Commission's orders and the statute are valid and enforceable against Texoma. If Texoma can be compelled to build extensions to the wells of other producers, such additional lines would require

Texoma to increase its investments by many hundreds of thousands of dollars. The purchase of gas from other producers would require Texoma to install meters for the measurement of such gas at a cost of approximately $1,500.00 per well. None of the expense incident to the purchase of gas from other parties is necessary to the operation of Texoma's business. In this connection, Texoma, by reason of drainage of gas from its reserves in the direction of oil producing and other low pressure areas in the same reservoir, Texoma is unable to take its just and fair proportion, based on the interest it owns in the natural gas contained in said reservoir.

[fol. 331] E. C. JOULLIAN, Witness for Plaintiffs (Affidavit):

Affiant is an active Vice President of Texas Panhandle Gas Company, a corporation, and his duties as such officer have to do with the production, transportation and marketing of natural gas from its leases in Wheeler County, Texas. Said company is a private corporation organized under the laws of the State of Delaware, and has its home office in the City of Dover, State of Delaware, and also has an office in Oklahoma City, in the State of Oklahoma, and at Shamrock, in the State of Texas. It has a permit to do business in the State of Texas, issued November 23, 1932, which permit is still in good standing. A copy of said permit is attached hereto and made a part of this affidavit.

Said company owns oil and gas leases situated in the Counties of Wheeler, Gray and Collingsworth, in the State of Texas aggregating 10,207.83 acres, all of which leases are located within what is generally known and understood to be proven gas producing territory. Of these leases 1396.53 acres are now producing natural gas, which gas classifies as sweet gas under the definitions set forth in House Bill 266 enacted by the Texas Legislature at the last regular session. On said 1396.53 acres are located 12 wells, in which said company owns an undivided one-half interest, which said 12 wells are managed, operated and controlled by said company, and which 12 wells have a present potential producing capacity of 352,239,000 cubic feet of natural gas daily.

For the purpose of gathering such natural gas and transporting the same to a point near the common boundary line [fol. 332] between the States of Texas and Oklahoma, where such gas is delivered into a connecting pipe line, said company has constructed and is now maintaining a system of pipe lines commonly referred to as gathering lines, varying in diameter from 4" to 10", and a main pine line 14" in diameter. The gathering lines aggregate about seven miles in length, and the main pipe line fourteen miles in length. Gas is produced from said 12 wells and transported through said lines by a continuous movement from the bottom of the well through the well casing to the gathering line connected directly with the casing at the well, through the gathering lines into the main line, and through such main line to a point just inside Texas from the common boundary line of the States of Texas and Oklahoma, where it then moves without interruption into a pipe line owned by an affiliated company, Consolidated Gas Service Company, and through said line across the said Common boundary line into the State of Oklahoma. It is then carried along in a continuous movement to the processing plant owned by Bartlett Gasoline Company, where it is processed for the extraction of natural gasoline therefrom. The residue is then transported through the main pipe line of Consolidated Gas Service Company to various points in the State of Oklahoma, including Enid, Blackwell, Tonkawa, and a large number of smaller towns and villages in the State of Oklahoma, and a portion of said gas is then transported through the main line of said last mentioned company into the State of Kansas, where it is delivered to the pipe line of Larutan Gas Corporation, through which pipe line last mentioned such gas is transported to various cities and towns in the State of Kansas, including the cities of Hutchinson, Wichita, and several other smaller towns and vil- [fol. 333] lages. Practically none of the gas produced from said company's 12 wells is disposed of in the State of Texas, the only exception being certain small quantities of gas sold to some thirty farmers near its pipe lines in the State of Texas who take very small quantities of the gas for domestic purposes. The gas used by such farmers is infinitestimal compared with the total volume of gas transported through said company's lines and the line of Consolidated Gas Service Company and Larutan Gas Corporation to

points in the States of Oklahoma and Kansas. In the States of Oklahoma and Kansas, gas is delivered from said 12 wells to approximately 21,321 domestic users of gas and numerous industrial users in the cities of Oklahoma and Kansas above named and in the other towns and villages in said States to which gas in transported as aforesaid. Said company and its affiliated companies and the domestic and industrial users above referred to are dependent almost entirely upon the supply of gas owned by complainant in this cause and located in the State of Texas. Complainant owns no other production except its production in Wheeler County, Texas. Consolidated Gas Service Company, an affiliated company, owns certain small leases in the State of Oklahoma from which it takes small quantities of gas during emergencies and extremely cold weather; but such reserves are very small and would afford no adequate supply of gas to meet the needs of the domestic and industrial users who are now using gas from complainant's wells in Wheeler County, Texas.

The gas produced from said 12 wells is now being delivered to Consolidated Gas Service Company under a contract through which complainant is obligated to produce, transport, sell and deliver to the other contracting party, and the latter is obligated to purchase and receive from [fol. 334] complainant at the terminus of complainant's 14 mile pipe line just west of the common boundary line between the States of Texas and Oklahoma, all of the other contracting party's present and future gas market requirements now served or hereafter to be served by said 14 mile gas pipe line and the connecting lines above referred to, which contract covers the period from July 2, 1931, to June 1, 1943. In other words, complainant has, through the negotiation of said contract, provided an outlet for its production of gas from its leases in the Panhandle of Texas above mentioned up to the market requirements of Consolidated Gas Service Company until June 1, 1943, and said contract and the market afforded thereby secures to complainant valuable property rights and themselves constitute valuable and substantial property owned and held by complainant as a result of its foresight, negotiation and skill and substantial investments of money and services.

In the purchase of its said leases, in the drilling and equipping of its said 12 wells, and in the purchase of rights

of way and in the construction of its pipe lines and other equipment and machinery incident to the production of gas from said 12 wells and transporting same to the connecting line of Consolidated Gas Service Company, complainant has made an actual tangible investment of not less than $1,500,000.00, and its leases owned by it as aforesaid represent and constitute a present investment value of $906,618.58. The producing leases on which said 12 wells are located represent and constitute a present investment value of $534,895.59.

The present market outlets of natural gas from complainant's leases in the Texas Panhandle aggregate daily about 16,000,000 cubic feet of gas, measured on a basis of assumed absolute atmospheric pressure of 14.4 plus 2 lbs., [fol. 335] which is the general basis of measurement used by pipe lines in gathering gas for transportation to market. Under the present orders of the Railroad Commission under attack in the above styled and numbered cause, complainant would be permitted to produce only approximately 3,628,000 cubic feet of natural gas daily, measured on the basis above stated, which is approximately 12,372,000 cubic feet less than the present market outlet or requirements of complainant. Based on a present investment value of $906,618.58 for its leases and a cost investment of $108,007.86 for the drilling and equipping of its wells, complainant has a present investment of $1,014,626.44 in its leases and production equipment alone, exclusive of its investment in its gathering lines and main pipe line in the State of Texas. It has production expenses for operation, maintenance, taxes, royalties and general expenses of $14,975.77 a year. Under the allowable fixed by the Railroad Commission for the month of August, 1935, the gas which complainant can produce from its half interest in the 12 wells above mentioned, calculated at the present prevailing field price of 2¢ per thousand cubic feet, would amount to only $12,913.08. Thus the operation and effect of the Railroad Commission's curtailment order would result in an annual operating loss of $2,062.69. Complainant would be able to earn, and is now earning, returns on its investment at the rate of 5.53% annually, instead of operating at the loss which would inevitably result from the enforcement against complainant of the Railroad Commission's curtailment orders.

Affiant states that in addition to its own investments aggregating more than $1,500,000.00 as aforesaid, the affiliated companies, Consolidated Gas Service Company and Larutan Gas Corporation, have investments in their facilities for transporting and distributing the natural gas which the [fol. 336] former company is purchasing from complainant aggregating $10,161,961.64, which sum added to complainant's investment makes a total of $11,661,961.64.

As heretofore stated, said 12 wells have a potential producing capacity of 352,239,000 cubic feet of gas daily, measured on the basis above stated, and the present requirements of users of gas from said 12 wells is approximately 16,000,000 cubic feet, which is less than 5% of the potential producing capacity of said 12 wells. During no month of the year will the average daily production from said wells exceed 9% of the present potential producing capacity of said wells. In fact, the highest average daily production from said wells during any month since they have been producing was 7.22% of the potential producing capacity of said wells, and the average for the year has never been more than 5% of the potential producing capacity of said 12 wells. The said 12 wells are, therefore, more than adequate to meet all the market requirements of complainant. In this connection affiant states that there has never been any wastage of gas by complainant in connection with the production, transportation and marketing of its gas. Natural gasoline is extracted therefrom before it is marketed for domestic and industrial fuel, and such natural gasoline is saved and marketed in due course of business, without waste. Complainant has always operated its properties in a careful, workmanlike and efficient manner, resulting in a minimum of leakage, and no more gas has ever escaped from any of complainant's wells than the necessary leakage incident to the business of producing and transporting gas, and such leakage would in no sense decrease, but would tend to increase, as a result of making connections with numerous other wells necessary to enable complainant to [fol. 337] procure sufficient gas to meet its market requirements under the orders of the Railroad Commission under attack in this suit. All the gas now being produced and heretofore produced from its said wells is and has been used for purposes permitted under the laws of the State

of Texas, and under the present gas law commonly known as House Bill 266.

Affiant states that under the schedule of allowables filed by the Railroad Commission, it would be necessary for complainant to build gathering lines and connections to 65 wells in the East Panhandle field or zone which 65 wells would be the wells nearest complainant's present pipe line and gathering lines. Of said wells, 35 belong to Lone Star Gas Company, another pipe line company engaged in producing, transporting and distributing gas in the State of Texas. The other 30 wells belong to various owners and, with few exceptions, are now encumbered with contracts between the owners of such wells and others who are now or have been purchasing and distributing gas. Complainant has no assurance that it will be able to make satisfactory contracts with the owners of any of said 65 wells, to which it would be necessary to make connections as aforesaid in order to meet its market requirements. In this connection affiant states that no gas pipe line transporting and marketing gas can safely rely upon gas to be produced from the wells of others as a reserve and supply for its market outlets. Unless the pipe line itself control the production and operate the wells from which gas is supplied to meet its market demands, it can have no assurance that it will have gas available as the domestic and industrial users who depend upon it for their supply of gas need and must have such gas. The fluctuation of the demand for gas incident to extremes of weather and change of season renders it essential that the pipe line company itself control the source of its gas production; otherwise, it and [fol. 338] those depending upon it for supplies of gas from day to day will be subjected to the hazard and peril of being thrown without an adequate supply of gas under weather conditions that would bring about great human suffering and great industrial losses to those who use its gas as fuel for the operation of their industries.

The practical effect of curtailing complainant's production to less than 5% of its present market outlet is to require complainant, which has expended large sums of money, together with the services of its officials and employees, in anticipating and negotiating for the market outlets for complainant's natural gas, to purchase almost 80% of its market requirements from others, and thus to

dedicate almost 80% of its investment in pipe line facilities and in its markets to those who have made no contribution to the cost or construction of said pipe line facilities and the negotiating and obtaining of such markets. In order to build the necessary gathering lines, install the necessary meters, and purchase and install the other equipment incident to connecting the above mentioned additional 65 wells to complainant's pipe line system, it would be necessary for complainant to make additional expenditures aggregating not less than $285,000.00, which amount is practically equivalent to the other 20% of complainant's present investment in its leases, wells, pipe lines and markets.

Affiant states that it was necessary for complainant to seek out and develop markets for its natural gas at points remotely situated from the gas field in which its wells are located. Said fields are a part of the great gas field lying in the Panhandle of Texas embracing approximately 1,300,000 acres of land, within which area not to exceed 150,000 people now reside. The people within said district [fol. 339] have gas easily accessible and are already supplied with all the gas they are in position to use or purchase. All the towns in the State of Texas in the vicinity of said gas field are already supplied with natural gas, and in order to develop markets for any substantial quantity of gas from its wells and properties, complainant was forced to seek out centers of population located outside the State of Texas and to transport its gas in interstate commerce to such centers of population. In order to obtain markets for its present volume of production, complainant and those affiliated with it have constructed and caused to be constructed about 300 miles of trunk pipe line leading from complainant's wells in Wheeler County, Texas, across the State of Oklahoma to points in the State of Kansas. In addition to said main line or trunk line, numerous other collateral lines delivering gas from such main line to cities, towns and villages near said main pipe line have been constructed by complainant and its affiliated companies at the very large cost hereinabove set forth.

Affiant states that as a matter of practical business, complainant would not have been able to finance the building of its pipe lines or to develop its present market for natural gas except on a basis of owning and controlling its

own gas reserves, as no investor could be induced to finance the construction of a pipe line for a borrower who is relying on purchasing gas from the general public for transportation through said pipe line, and those desiring to distribute or purchase gas for domestic and industrial purposes could not be induced to enter into market contracts and commitments except on a basis of the pipe line's owning its own gas reserves.

Affiant states that scattered over the East Panhandle field in which complainant's wells are located, there are a [fol. 340] number of wells whose owners have not provided themselves with pipe line facilities and markets to dispose of the gas from such wells for lawful purposes. With the exception of about nine wells, all of said wells, however, have been connected with gasoline plants or stripping plants, which were operated prior to the enactment of House Bill 266, but which have been shut down as a result of the operation of said Act.

Complainant is purchasing no gas from the general public; but is producing all of its gas from the 12 wells abve mentioned, which are controlled and operated by it as heretofore stated. By special arrangement with the owners of such undivided interest, complainant purchases the latter's interest in the production from said wells.

Complainant's oil and gas leases are along the lines of the ordinary oil and gas lease known as Producers 88 Form commonly used in the State of Texas. A copy of a Producers 88 Form of oil and gas lease is attached hereto, marked Exhibit 2, and expressly made a part of this affidavit. While not all of said leases are in the express terms of said lease form, the legal rights accruing to complainant and its lessors are substantially the same under all of its oil and gas lease contracts.

[fol. 341] C. J. PETERSON, witness for plaintiffs.

Direct examination.

By Mr. Morgan:

My name is C. J. Peterson. I live in Amarillo, Texas. I am Chief Geologist for Texoma Natural Gas Company. I received an A. B. degree in geology and mining from

Stanford University, California. I did mining engineering for six years, then went into geological work in the Mid-Continent field. I have been employed in a geological capacity by Empire Gas & Fuel Company, Hamilton Oil Corporation and Cities Service Gas Company. In 1923 I was put in charge of geological explorations for the Cities Service Gas Company, when I started my study of the conditions in the Panhandle field. Since I have been with the Texoma Natural Gas Company, my work has been exclusively in the Panhandle gas and oil field of Texas. That field extends from southern Wheeler and northern Collingsworth Counties across the Counties of Gray, Carson, Hutchinson, Potter, Moore and into Oldham and Hartley Counties. It is about 124 miles long and the proven area has an average width of around 20 miles The proven area includes between 1,400,000 and 1,500,000 acres. The West Panhandle field as designated by the orders of the Railroad Commission comprises 1,184,857 acres, or about 1,851 square miles. I estimate that the original reserves of gas underlying the West Panhandle field as 14,987,000,000,000 plus cubic feet figured at a 16.4 pound pressure base to a 25 pound abandonment pressure. The original volume of sweet free gas found in the West Panhandle field I estimate [fol. 342] to have been 11,309,000,000,000 plus, and the original volume of sour free gas in said area as 3,677,661,000,000 cubic feet of gas.

The Texoma Natural Gas Company has withdrawn from the West Panhandle field through July 31, 1935, 98,-823,081,000 cubic feet of gas at 16.4 base. The total withdrawals by all pipe lines in said West Panhandle field are estimated at 609,308,173,000 cubic feet. I estimate that all producers other than pipe lines in the gas area of the West Panhandle field have withdrawn a total of 3,-818,330,958,000 cubic feet. The percentage withdrawn by Texoma is 2.23 per cent of the total. The average rock pressure of the wells belonging to the Texoma Natural Gas Company as of July 31, 1935, was 336.8 pounds. The average rock pressure on wells connected to all pipe lines in the West Panhandle field, including Texoma, at that date was 364.5 pounds. The Texoma Natural Gas Company has produced from its developed leases an average of 1,312,000 cubic feet per acre. The average production per acre from the developed leases of all pipe lines in the West Panhandle

field is 1,157,000 cubic feet. Exhibit No. 3 is a summarized statement of my testimony with reference to these matters.

I have prepared a map showing the distribution of acreage among the pipe lines, which map is Exhibit No. 4. The yellow color shown on the map represents the acreage covered by Texoma's leases, the red area represents the holdings of other gas pipe lines, the blue area shows the holdings of other companies. The irregular line principally [fol. 343] to the north of the acreage portrayed in yellow represents the border line between sweet gas and sour gas. That is the dividing line between the acreage which carries sulphur gas and acreage which carries no sulphur gas. This line runs east to the line which was designated by the Railroad Commission as the dividing line between the East and West Panhandle fields. There is no sour gas in the East Panhandle field.

Texoma Natural Gas Company owns within the West Panhandle field about 198,200 acres of gas properties. The map also shows the location of the various gas pipe lines taking gas from the Panhandle gas fields. In a general way, most of these lines are located in the southern half of the West Panhandle field, which is the sweet gas portion. The northern boundary line of the holdings of the pipe line companies is also the line between the sulphur gas and the sweet gas. This is for the reason that such companies are able under present economic conditions to use only sweet gas for their markets.

Exhibit No. 5 is a rock pressure map of the entire Panhandle field, showing the rock pressure conditions by bands which represent 20 pound interval zones in rock pressure. I prepared this map and the data thereon was obtained from the Railroad Commission in June and July of 1935. The areas shown in dark gray represent areas with pressure ranges from 200 pounds downward. In part of the field the pressure is ranged down to 120 pounds and possibly lower. The Borger and Lefors area and an area in Wheeler County have pressures below 200 pounds.

[fol. 344] I prepared Exhibit No. 6, which was a rock pressure map, which was prepared in 1932 and shows the same information as Exhibit No. 5 at an earlier date. The low rock pressure area in the Borger field is about three or four times as large now as it was then, and in the Lefors area the low rock pressure has been extended. The

areas, especially in Wheeler County, which had pressure above 400 pounds have been materially decreased. The area in Wheeler County which had pressure of less than 200 pounds has increased.

I prepared Exhibits No. 7, No. 8 and No. 9. Exhibit No. 7 is the very east portion of the West Panhandle field. Exhibit No. 8 is another sector of the West Panhandle field directly West of the first sector. Exhibit No. 9 is the next sector west. I have portrayed on each of these maps the location of the pipe lines, the sour gas line, the stripping plants, natural gasoline plants and the location of gas wells in these sectors and the pressure of the wells. The properties of the Texoma are shown in yellow and the properties of other gas pipe lines are shown in red. The properties of Cargray Corporation are shown in blue on Exhibit No. 8, and also the properties which underlie the wells which are connected to the Cargray plant. Properties connected to the Cargray plant on July 31, 1935, amount to 4,080 acres.

I have shown the location of the 29 wells of the Texoma Natural Gas Company located most closely to those 29 wells connected to the Cargray plant. The black dots which appear in the northeastern portion of Exhibits Nos. 7 and [fol. 345] 8 are oil wells, which wells are in areas of low pressure due to the production of gas in the oil field and from the gasoline stripping plants which are located in the same part of the field.

Down to July 31, 1935, from what I could make out from the records of the Railroad Commission, the amount of dry gas stripped from the 29 wells connected to the Cargray plant amounted to 105,553,186,000 cubic feet, or about 23,000,000 cubic feet per acre, reduced down to a two pound base. The average production per acre from the 29 Texoma wells located nearest to that area totals 2.66 million cubic feet, or a total of 41,139,014,000 cubic feet, on the same two pound pressure base. These figures on both the Cargray and Texoma take into account only developed leases; that is, only the leases on which wells are situated.

Exhibits Nos. 10, No. 11 and No. 12 show similar information in Hutchinson, Moore and Potter Counties, respectively, Exhibit No. 13 shows the estimated total production from the Texas Panhandle field by daily averages from July, 1926, through July, 1935.

Fifty-six per cent of the total gas reserves in the West Panhandle field is owned by the pipe lines, and a little over sixty per cent in the entire Panhandle field is owned by pipe lines.

Exhibit No. 14 is a chart showing the amount of gas by daily averages which was produced during the period of the first seven months of 1935. On this exhibit the line extending from the bottom up to the point marked "C" will give the proportion of gas which the pipe lines would have a right to produce if they produced in accordance with their ownership.

[fol. 346] Exhibit No. 15 is an ideal cross-section of a portion of the Panhandle field which shows the underground condition existing in the field, especially the formations which produce gas and oil, and also the approximate location of water. This sketch was prepared from logs showing the relationship of the formations penetrated, although I had to assume certain things in the cross-section to show the true condition which I could not get evidence on. The irregular section here at the bottom of the sketch depicts the original granite ridge which underlies the Texas Panhandle field. The water level in this field is located approximately at sea level and is represented by a heavy black line on the exhibit. Just above this line appear portions colored in green, which represent oil occurrences, and next in succession are the portions colored red, which portray occurrences of gas. In the central part of the exhibit the topmost gas pay shown in red is supposed to be in the dolomite formation. This same formation at lower structural positions contains oil, and lower still contains water.

Cross-examination.

By Mr. Francis:

The original well drilled in the Panhandle field was the Masterson well, which was drilled in 1918. This well is located in the region of high pressure on the first map I introduced. The original rock pressure was about 435 pounds. Its present rock pressure is about 418 pounds. The well is located a little to the west central part of the south portion of Exhibit No. 5 in Potter County, and that area still has a pressure of more than 400 pounds after tremendous quantities of gas have been extracted.

[fol. 347] The water difficulties in the Panhandle field are in the areas which have been producing the longest period of time.

The original gas reserves under the lands owned by the Texoma in the West Panhandle field was around fourteen or fifteen million cubic feet per acre.

When I gave the relative amount of gas that had been produced by the Texoma wells and the wells of the Cargray stripping plant, I took into account, in addition to the acreage which the Texoma wells had allocated to them under the present order of the Railroad Commission, also the acreage which is in the leases held by the particular wells of Texoma. Texoma owns approximately 14,000 acres contiguous to the 29 wells mentioned.

One of the big evils which I, as a member of the gas industry, have found to exist in the Panhandle field is the wasteful utilization of gas by blowing it into the air. This is a very big evil which the industry as a whole has agitated the Legislature to correct; the industry is in favor of conservation. One of the problems which the industry confronted and which it was anxious to have the Legislature cure, was the waste of gas by blowing it into the air, stripping it of its gasoline content before doing that.

When the situation obtained by which such concerns as the Cargray plant were operating, stripping the gas of its gasoline content, I appeared in court and gave testimony that such concerns were securing an overwhelming and disproportionate amount of gas proportioned to their hold-[fol. 348] ings. There was also confronting the industry a second evil which existed at that time, the evil of disproportionate and unratable taking. This was a very serious problem from the standpoint of the industry.

Q. So that you had those two outstanding evils existing in this field prior to the adoption of House Bill 266, and I would like to ask you if there wasn't a third one which the industry generally recognized, and if that wasn't the problem that arose not from the fact as in this complainants' Exhibit No. 8 graphically shown, and as you have described the Cargray plant in reference to the Texoma, one a stripping plant and one a pipe line company, but was there not a tremendous problem existing in reference to the men in the field who did not have a well connection either with a stripping plant or with a pipe line company? That was a

problem generally recognized as to how his rights in and to the gas in the common reservoir were to be protected, wasn't that true?

A. I presume so; I am not a lawyer.

In the area shown on exhibit No. 5 there were many people who owned wells which were not connected either with stripping plants or with gas pipe lines. A few of these were in the high pressure area, and a great many of them originally drilled for oil, but failing to get oil, were in the low pressure area. There were scattered wells throughout this field and still are which have no connections of any kind with pipe lines or stripping plants. When I testified with reference to Exhibit No. 14 I assumed that the pipe line companies had the right to produce gas in proportion with their holdings. So that, as a member of the industry [fol. 349] and as a representative of an owner in the field, I tell the Court that one of the big problems that existed in that field and has existed for many years is the problem of disproportionate taking.

When I gave the figure on direct examination as to the amount of gas that Texoma had taken from its property, I gave only the amount of gas which Texoma Natural Gas Company itself had produced from the well, although many of these wells had been owned by other people and gas had been produced therefrom prior to the time Texoma had acquired them. I do not know the amount of gas which had been produced from those wells prior to the time Texoma purchased the wells and leases. I do not know that there was a considerable quantity of gas taken from any of these wells prior to the time Texoma acquired them.

[fol. 350] C. Don Hughes, witness for plaintiffs.

Direct examination.

By Mr. Morgan:

My name is Don Hughes. I live in Amarillo, Texas. I am a consulting geologist and have been engaged in that profession fifteen and a half years. I received my technical education at the University of Kansas, which I attended

for four years during the period from 1916 to 1920. From 1920 to 1929 I was employed by Empire Gas & Fuel Company as geologist and petroleum engineer, my work being in the States of Oklahoma, Kansas and Texas. During the first six years of this employment my time was devoted to the study and solution of oil and gas problems. During the last three years of this employment with said company I lived at Amarillo, Texas, and devoted practically all of my time to oil and natural gas problems. On leaving the employment of this company in 1929, I opened an office as consulting geologist and consulting engineer at Amarillo, Texas, where I have lived and practiced my profession since that time. Practically all of my time during the past seven years has been devoted to the study of gas problems. During my ten years work in the Panhandle of Texas I have become thoroughly familiar with the general geological structure of the oil and gas producing area in the Panhandle, and with the various formations contained in said structure from which sweet gas, sour gas and oil have been produced. Much of the information which I have has been accumulated as the result of my ten years' work in the Panhandle area, and other information which I have has been procured from the most reliable sources, including the records of the Railroad Commission and the records and figures of oil companies and gas companies producing oil and gas in the Panhandle area.

[fol. 351] I have been working in the Panhandle ten years, principally on the gas phase of the oil and gas business.

I estimate the total volume of free gas now present in the sweet gas producing area of the West Panhandle field as 8.781 trillion cubic feet. I estimate the total volume of gas now present in the sweet gas producing area of the East Panhandle field at 2.3 trillion cubic feet. These figures are unrecovered reserves.

I estimate the total unrecovered reserves of gas in the sour gas area of the West Panhandle field as 2.297 trillion cubic feet. I estimate that the reserves now owned by Texoma Natural Gas Company are 20.45 per cent of the original total sweet gas reserves in the West Panhandle field. I estimate the total volume of gas produced from wells in the West Panhandle field, which wells were called oil wells at the time they produced it although they produced gas, as 3,337,329,504,000. The total average daily

production of gas from oil wells in the West Panhandle field was about 399,000,000 cubic feet as of July, 1935. The total volume withdrawn from wells now classified as dry sour gas wells in the West Panhandle field is estimated [fol. 352] to be 122,820,828,000 cubic feet. The daily average production from such wells as of July, 1935, is 431,891,000 cubic feet. Under the last two or three orders of the Railroad Commission production has jumped to a level of 520,000,000 cubic feet daily.

The West Panhandle field contains 723,000 acres in the sweet gas area, and 270,000 acres in the sour gas area. There is no sour gas in the East Panhandle field. This sour gas area is located through the north side of the middle of Gray County, crosses the north side of the field, spreading out in the vicinity of Borger, and on up into Moore County and around the west edge of the field. There is practically no production at the extreme west end of the field. The sour gas producing area is located in the north end of Moore County and on to the southeast through the area that embraces and skirts the oil producing area.

I have prepared Exhibit No. 16, which shows the gas wells in the West Panhandle field which are not owned by or connected to the natural gas pipe lines, the number of acres on which each well is situated, the rock pressure of the well, the accumulated production and the average production per acre of all such wells. There are 211 sour gas wells which are not owned by or connected to pipe lines, with a potential daily producing capacity of 2,128,328,000 cubic feet. There are 293 sweet gas wells connected to pipe lines and 180 not connected to pipe lines, a total of 473 wells, with a potential daily producing capacity of 8,324,321,000 cubic feet. If the 473 sweet gas wells, with a potential of more than eight billion cubic feet per day, are [fol. 353] assigned an allowable of 602,000,000 cubic feet per day, whereas the 211 sour gas wells with a potential of around two billion, or one-fourth as much, are allowed to produce 520,000,000 cubic feet per day, I think such condition sets up an unequal drainage action in the common reservoir. The sour gas wells are mostly located in areas of low pressure, and the tremendous differential in the allowable to sour gas wells would aggravate the condition.

The total production of sweet gas from the 180 sweet gas wells in the West Panhandle field not connected to or

owned by pipe lines has been 418,652,466,000 cubic feet, and the total production from the 211 sour gas wells in that field has been 496,635,182,000 cubic feet. The average production per acre of the 180 sweet gas wells has been 13.9 million cubic feet per acre. The average production per acre of the whole group has been 14.3 million cubic feet per acre. The average rock pressure of the 180 sweet gas wells is 233 pounds, that of the 211 sour gas wells is 220 pounds, and for the whole group of wells not owned by or connected to pipe lines in the West Panhandle field is 226 pounds. I have broken up the summaries just stated into the details showing each well, the number of acres on which it is situated and the rock pressure of the well, the cumulative production and the average production per acre of all the wells in the West Panhandle field not owned by or connected to pipe lines, and this tabulation is shown in complainant's Exhibit No. 16.

There has been substantial production of gas in the West Panhandle field by others than owners of pipe lines since July 31, 1935. The operation of stripping plants was resumed beginning about the 1st of September. Estimating the December production of such plants as being the same as the November production which was actually reported, the American Natural has produced since July 31, 1935, 17,700,160,000, a total take per acre of 8.52 million cubic feet. The Cargray plant in Carson County has produced 24,260,243,000, an average of 5.44 million cubic feet per acre. The Henderson-Sanford has produced 7,757,-263,000, an average of 12.02 million cubic feet per acre. Huber, formerly Pacific American, has produced 6,833,-[fol. 354] 964,000, an average of 3.69 million cubic feet per acre. The Shamrock-McKee in Moore County has produced 22,484,659,000, an average of 3.02 million per acre. The Skelly-Armstrong in the east edge of Moore County has produced 3,457,975,000, an average of 1.41 million per acre.

Using only the wells that are classified either as bradenhead or gas wells, the Smith Brothers Sita plant has produced 5,820,278,000, an average of 4.69 million per acre, [fol. 355] making a total of 88,314,542,000, or an average per acre production of 4.38 million.

Exhibit No. 17 contains graphs charted to show the comparison between the sweet and sour gas areas. Under the

October schedule the allowable in the sweet gas area, on a basis of acres in the field, represents a rate of withdrawal per acre per day of .525 thousand cubic feet in the sweet compared with 1.335 thousand in the sour, making the sour about two and a half times as great as the sweet. The same application based on relative potentials shows about five per cent withdrawal on the sweet as against 22.3 per cent on the sour, giving the sour something in the neighborhood of four and a half times the sweet, and on the basis of remaining reserves results in a percentage of .00434 in the sweet and .0157 in the sour, giving the sour 3.6 times the advantage of the sweet.

I have made a study of the appearance of water in wells located in the West Panhandle field, have gone through the gas well test tickets in the Railroad Commission office in Pampa, and have noted any reference made to water in the gas wells. On the test tickets prepared in June and July of 1935 I found a total of 46 wells which had some notation as to sprays of various kinds. On Cities Service No. 1 Land in Carson County the notation was "Light spray when first opened. Dry after ten minutes"; Cities Service No. 1 White Deer, "Well first opened, light spray"; Cities Service 14 Burnett, "Spray five minutes"; Cities Service Noel No. 1, "Well first opened water. Dry after five minutes." Out of the 46 I found that about 32 of them had notations of the type I have just read, which indicated very small quantities of water. I found 14 in which I considered the notations indicated water in greater quantities. It is [fol. 356] not abnormal for a gas well to make a spray of moisture due to different causes, one of which would be the actual condensation of the natural vapor content of the gas which came out of the well. There is moisture in vapor form with the gas in its natural state. That gas is at a higher temperature in the formation than it is at the time it comes out of the well, and the change in temperature can condense the vapor very readily, and many types of conditions that are in the well bore and in the casing itself could cause that condensation. I do not consider a spray such as that described as any indication of water trouble in a gas well.

As to the 14 wells that had a different character of notations, Champlin 4 Bryan, Carson County, the remark was "Started making water after twenty minutes." I found

that that well was an old oil well and is in a nearly depleted oil area. It was drilled to within 19 feet of sea level, and it is not unusual at all to find a condition such as that resulting in water in the well. This well is southeast of Borger, being in Section 92, Block 4, Carson County, an oil producing area. Reiger and Travis No. 1 Martin in Section 90 Block 7, Carson County, in the very southeastern part of the gas productive area had the notation "Water," and I find that it is an old oil test drilled 240 feet below sea level, and then plugged back for a gas well. Cities Service No. 1 Hexter near the northeast edge of Gray County in Section 215, Block B-2, had the notation "Wet." I find that it was an old oil test drilled to 70 feet below sea [fol. 357] level, drilled into water and was plugged back. The Mid-Gray McCollough in 153, Block 3, Gray County,—the notation was "Some water". I found also that it is an old oil well that had been drilled into water. The ticket listing Texoma No. 2 Bull—I understand that this well was sold and is owned by the Coltexo Company—had the notation "Well is full of water." I find that it is an old oil well depleted and plugged back in an attempt to make a gas well out of it. The Finston No. 1 Peterson in Section 22, Block Y, Hutchinson County, in the Borger area, had the notation "Flowing water, reading after one and a half hours." I find that it is an old oil well in a depleted area. Phillips Petroleum No. 1 Gowland, Section 22, Block Y, had the notation "Lots of water, reading after 45 minutes." I find also that it is an old oil well in a depleted area. Texas Company A-3 Garner, Section 122, Block 4, southeastern part of Hutchinson County, says, "Some water, making oil in heads", and I find that it was an old oil test plugged back for a gas well. In these last three cases I don't have the elevation with me but from the total depths and from my knowledge of the area, and the fact that they were completed in the oil zone originally, they were very close to sea level. In Moore County the Canadian River I-1 Bivins, Section 54, Block 47, the notation was "Blowing water". I find that it was drilled for an oil test into water and plugged back for a gas well and very poorly completed. Canadian River A-2 J. C. Warrick in Section 92, Block 46, the notation was "Heavy mud spray". It was an old oil test and completed back for a gas well. Canadian River 2-D Sneed, Section 26, Block 6-T, the notation was "Dark

[fol. 358] spray". I find that it was an old oil test drilled into water and then completed back for a gas well. Red River A-1 Shelton in Section 52, Block 3, G. & M., Moore County, the notation was "Spray of rock intermittently." That really has nothing much to do with water, but it was an oil test and plugged back for a gas well. Shamrock A-1 Burnett in Section 359, the notation was "Very heavy water spray", and it was an old oil test drilled to 5545 feet, nearly 2000 feet below sea level, and then bridged back for a gas well. Sunset No. 1 Brumley, Section 360, Block 44, Moore County, says "Very heavy salt water spray", and I find that it was an oil test, had water with the oil when first completed. Canadian River A-1 Warrack in the northeast corner of Potter County, the notation was "Heavy spray with rocks". It was an old oil well and plugged back.

Every gas well that I find making water in the West Panhandle field is a well which has been drilled either as an oil well or as a test for oil down to the water level or below the water level. My tabulation does not include oil wells that are making water. Water has shown up in oil wells in the low pressure areas. This is true of Borger, the oldest intensely drilled section. The dolomite area northeast of Borger which is the northwest extension of the Badger pool, sometimes called the Hale area, is lower on the structure than the Borger area. The Badger or Hale area for the past year and at the present has been a very actively developing oil area.

I agree with Mr. Peterson that Exhibit No. 15 is an idealized cross-section across from the north to the south [fol. 359] of this oil and gas producing area. On this cross-section the Borger area would be typified by the first line to the right of the three lines in a group which come down just to the right of the old granite range. In drilling a well at Borger you would go through the upper strata, one or more of which would produce free gas, and by drilling on down to lower levels you would encounter strata which produce oil. There is no free gas to speak of in the Badger area. The free gas is to the south of it or southwest of it in the vicinity of Borger or corresponding portions of the formation.

There has been an intensively heavy production of gas in the Borger area, which is one of the pronounced low

pressure areas of the entire field. If the creation of a low pressure area would result in a channeling of water from the formation up to the place where the oil or gas once was, the Badger area would have been the most ideal place I can think of in the field where the oil would have gone upstructure into the low pressure areas to the south. This indicates that there is not an active water-head present. If there had been a water drive as the gas was withdrawn from the part of this structure pointed here on the sketch at the second place on the sketch as the pressure was released there, the water would have driven the oil out of the formation where it was afterwards found on into that part of the formation from which the gas had been withdrawn. The normal expected occurrence would be that these higher formations which first produced gas and which continued to produce gas would eventually have become producers of oil as a result of the oil being driven in and [fol. 360] to where the wells were in the Borger area. I cannot account for the presence of water down deep in the strata to the north by a channeling of the water up through the strata, which were encountered and which produced either gas or oil in the Borger area. The lenses or layers between the formations containing either oil, gas or water in Exhibit No. 15 in some cases have practically no porosity, although you might take that cross-section a little ways in either direction and find that the lenses, as they played out, would have porosity. The white strip between the upper producing area which produces gas up here and oil on over here and the oil producing formation represents a shaley zone between the upper dolomite and the lime. It would be impervious for practical purposes. Such formations would prevent coning of water from below the bottom of the well.

I account for the fact that water has shown up in a great many wells in the Borger area by the fact that, in addition to our knowledge of a lot of the wells having drilled into water, as the oil was taken out of those porous lenses the water below those formations came on into where the oil was taken out but did not rise upstructure from the north. It would have to come around those impervious substances, though there is a possibility of some water coming into that area or any area through filtration from the waters that are encountered above the pay horizon in the drilling of

wells. There is a possibility that it could have come up through the well bores that had been drilled down to the water. In the early exploration of this Borger area a number of operators drilled on into water. This was a very common practice.

[fol. 361] The fact that water has risen in the well bore of a well drilled into water up into the producing formations above and on to a higher level would not indicate that there is an active water drive behind the field there. In the early history of this field, when a well was drilled into water, the water would rise into the well bore to a height of about a thousand feet above sea level or the bottom of a hole, which is usually about sea level. The oil would rise three or four hundred feet above that due to the difference in the weight of the column. In the immediate Borger area water does not now rise a thousand feet in the well bore. It is pretty hard to know exactly, but from what I am able to learn the rise in that area is in the neighborhood of two or three hundred feet. If there were an active water drive, the water would keep the pressure up and continue to rise to the height that it originally did.

Exhibit No. 18 is a study of the location of the oil pays in detail with respect to that lowest horizontal line, which is sea level in that area northeast of Borger which we mentioned as being the Hale-Badger area. Generally speaking, this area is between the Borger area and the water and down the producing formation, although there are a few of those wells that are nearest in to the Borger area that are upstructure that had a little free gas. In general the area has no free gas. The idea of the cross-section was to show that those oil pays are being encountered at a normal position with respect to sea level that you would have ex-

[fol. 362] pected to have found them ten years ago; in fact, one of the wells, the only well that shows water in the record, is one that was drilled ten years ago and some of the others right near it were drilled practically as deep, in fact, one or two deeper than it, but didn't find water. None of these wells is exempted on the ground that they are making water, although they are in the very closest position in reference to the water of the producing formation up there in that section of the field.

Cross-examination.

By Mr. Francis:

There are approximately 2600 oil wells in the Panhandle field. There are in the neighborhood of 1000 gas wells in the entire field. I don't know that there are about 645 of the total wells, or twenty per cent of the wells in the field, which are already affected by water troubles in a more or less substantial way.

The 46 wells which I testified about included gas wells only. I did not include in my discussion of the water condition in wells in the Panhandle anything about those oil wells which have been granted special water exemption certificate by the Railroad Commission. On the January schedule there seems to be 79 oil wells which, on account of the production of water, have been granted water exemption certificates. Six of these wells are in Carson County, 31 in Gray County, 40 in Hutchinson County and 2 in Wheeler and Gray Counties. These wells which have special water exemption certificates are pretty well scattered over a substantial portion of the oil field.

[fol. 363] I don't know whether or not the representatives of the Railroad Commission who made the test on the 46 gas wells allowed a lapse of twenty minutes from the opening of the well in which to blow off any condensate before any notation whatever was made about water conditions. I know nothing about the manner and way in which the tests were made, my study being made only from the test well tickets, and then I made a study of the records of the wells to see if I could find the cause where a well seemed to have more than a normal amount.

The formation which is shown on Exhibit No. 15 is underlain with a water bed and as the formation dips lower with respect to a general table at sea level, if the porosity continues downward you would expect water to be immediately under it. Where the granite core is shown, you wouldn't expect to find any water by drilling into that central core of granite, no matter how deep you would drill. I am not in a position to tell the Court that on the extreme west side of this field and immediately below the formation that produces gas and which formation extended over to the east, oil being in the lower portion thereof, there is no water under that formation over in the west portion of the field.

The normal expectancy would be that as you go down into the potential water zone if you encounter porosity there you would encounter oil, but your normal occurrence throughout the field would be that if that porosity continued directly downward from where you had free gas, before you would encounter water you would encounter oil. I don't [fol. 364] know whether or not below the gas formation here in the West Panhandle field there is a water zone immediately below and in contact with the gas producing horizon. There have been so few wells drilled up there right down low on the west side of the structure, we don't know very much about that as far as whether there will be some oil there or not. Offhand, I don't know of a single well in which the continuous porosity in the gas formation went on down and immediately in contact with its encountered water. I will not tell the Court that there isn't any water immediately below it and adjoining the producing structure in the West Panhandle field.

My testimony is that there is not an active water drive. As to the difference between hydrostatic head and active water drive, my understanding would be that we might have a hydrostatic control, but due to the restriction of porosity and the interconnected reservoir beds that it would not be active. It just could not be active. I testified that the normal occurrence is that we have oil immediately below the gas; if your porosity continues downward, you have oil in contact with the gas and then water below the oil, if the porosity continues downward in that particular locality. I don't consider that there is an active water drive in the eastern portion of the field immediately below the oil producing structure. There might be competent engineers whose theory and idea with respect to that differs from mine.

Under the original virgin pressure in the Panhandle field water would rise in the wells in the Borger area a thousand [fol. 365] feet. This is also true of other parts of the field outside the Borger area.

The list of fourteen wells which I considered separately in my testimony about the 46 wells were wells which were originally drilled for oil and then plugged back to make gas wells. It could be true that there has been in the Panhandle field a connection made as between the water producing strata and upper oil or gas bearing strata by the

actual drilling of wells, which have been in many instances drilled and the wells left open without casing going clear down to the bottom. I have not said that there is not an artificial connection made between these different strata in the Panhandle producing structure by reason of drilling wells down to the bottom of the producing sands and down to where there is a water zone and where the wells have been left open and the casing set higher.

In testifying about the operations of the Cargray plant, I did not take into consideration the fact that the gas had been produced since last September under and by virtue of a court injunction. I did not say that the disparity which I testified about in the Cargray production as compared to the Texoma production, is a disparity permissible under the order of the Railroad Commission of December, 1935.

The drainage going on between the sweet gas area and the sour gas area in the West Panhandle field has been going on to the same extent more or less long prior to the passage of House Bill 266. It started when the pressure [fol. 366] differentials were set up between the two fields. That drainage has been going on and will continue to go on as long as the pressures in the sour gas area are lower than they are in the sweet gas area. It was brought about by the unusually high withdrawals in the oil field area, which created lower pressures, which in turn resulted in gas migrating into the lower pressure areas from the higher pressure areas. When you have withdrawals in any part of the reservoir which create a pressure that is lower than the adjoining area, the gas begins to migrate into those lower pressure areas. The lower pressure areas are caused by more gas being taken out at that particular part of the reservoir. If you take gas out of a part of the reservoir, the pressure begins to go down in that part of the area with the withdrawal of gas. It is true that in order to keep the balance of pressure so that there would not be a migration from one place to another, it might be that one well would have to take more and another well less. I don't think a condition where there are disproportionate drops in pressure in one area as against another is a condition more to be desired than a condition where the pressure decline is substantially the same throughout the reservoir. I don't believe I can answer your question as to whether or not the creation of those pressure differentials which result in the

migration of gas is a condition which is of such serious moment as requires any corrective measures in order to prevent drainage.

I don't consider that the past operation of the field has resulted in the creation of a threat from water channeling, nor do I think there is any likelihood of it. Water channel- [fol. 367] ing would be a case where due to some reason the water would follow in a zone of porosity from one zone into another, but I don't know of any cases of water channeling in the Panhandle field.

I don't think in the Panhandle field there is any danger of sucking in this water and cutting off large areas of gas that will never be recovered. From my investigation of the water situation in the Panhandle, there are numerous examples where over in the high pressure areas in the West Panhandle field you find gas, oil and water in the same well bore, and there are wells at this time in the high pressure areas which in the same well bore you find gas, oil and water. Quite a few of those wells, under the statute, would be classified as gas wells.

Redirect examination.

By Mr. Morgan:

The gas, oil and water found in the same well bore is all a part of the interconnected reservoir of the Panhandle field. It is encountered in the drilling of a well by encountering the gas first and then the oil and then the water.

The fourteen wells which I found to be producing water in substantial quantities have not been heavy producers of gas. I have examined the records of the Commission to ascertain the twenty largest producers of gas in the field. I found twenty wells in the field that had produced more than ten billion cubic feet each, which is much greater than the average of the fourteen wells we just mentioned. There [fol. 368] is no notation of any water or moisture content on the gas well test tickets of these twenty wells, and there were tickets on all of them but one.

I did not count the test well tickets on file in the Railroad Commission of the tests made in June and July, but I am sure that it represents the list of the entire gas wells in the field.

Recross-examination.

By Mr. Francis:

As to whether, when the Railroad Commission representatives took open flow tests of these wells, they did not at that time attempt to make tests of water wells, I don't know the details under which the tests were taken. I went through the original test tickets in the Pampa office and they all had dates on them in June and July of 1935, the date on which the test was taken, and wherever the ticket had a notation which had to do with any moisture in the well, I made a note of that well and the remark that was on the ticket. I looked at some of the tickets of the tests which were made in December, 1935, under the direction of W. F. McDonald, District Gas Engineer, and M. C. Dillingham, Division Gas Engineer, but the list was not complete. My list was made up from the complete list made in June and July of 1935.

I stated on direct examination that since September 1st the Cargray gasoline stripping plant had withdrawn 5.44 miliion cubic feet per acre, and that Texoma had withdrawn less than half of that quantity over the entire period down to the end of July, 1935. That disproportionate taking results in drainage from one to the other. The drainage [fol. 369] is from the higher pressure to the lower pressure. If you shut in the Cargray plant and it does not have an outlet for light and fuel purposes, drainage would continue until the pressures would become equalized and then would become lower back in the other direction, although it is necessary to take into consideration the whole picture in which there are lower pressures, than on to the north in the oil field.

Redirect examination.

By Mr. Morgan:

Assuming that Cargray has taken a total of 28,000,000 per acre and the Texoma has taken 2.66 million cubic feet per acre, at the rate the Texoma has been taking over the past six years it would take about fifty years for Texoma to catch up. The arithmetical figures would be correct.

[fol. 370] RICHARD W. CAMP, a witness for plaintiffs.

Direct examination.

By Mr. Morgan:

My name is Richard W. Camp. I reside in Oklahoma City, Oklahoma, where I have lived for the past twenty-one years. I am employed by Consolidated Gas Utilities Corporation as engineer and geologist in charge of the production and geological departments. I received my technical training in the University of Oklahoma, where I graduated in 1923 with a degree of Bachelor of Science in geology. I was first employed by Oklahoma Gas & Electric Company in the years 1927 to 1928. My work was principally in Oklahoma; but I did some work in eastern Kentucky and West Virginia and in the Texas Panhandle. Since June, 1928, I have been employed by Consolidated Gas Utilities Corporation and its predecessors in interest. I have had constant contact with the Panhandle field in Texas since 1928, and I have served on engineering and geological committees in compiling geological and engineering data pertaining to production problems in that field. In addition to my work with Consolidated, I have, with the permission of my employer, done considerable outside consulting work, particularly in estimating oil and gas reserves. Among those for whom I have performed services of this character are the Empire Companies, the Battles & Battles Banking Interests of Philadelphia, Hale & Waters Banking Interests of New York, Westgate Oil Company of Oklahoma City, and others.

The producing property of my company is in Wheeler County, Texas. It has acquired by transfer all of the properties of Texas Panhandle Gas Company and its affiliated companies mentioned in the original bill of complaint.

[fol. 371] I have prepared a map, being Exhibit No. 22, which delineates the gas field in the East Panhandle District. This map shows the main gathering lines located in said field, the various pipe line companies, gas pipe line companies and gas stripper pipe lines, the location of plants and the connections to the individual wells, and the location of both the oil and gas wells.

I caused to be prepared Exhibit No. 23. Using the pressure data obtained from the test taken by the Railroad Commission in June and July, 1935, this exhibit shows the pressure condition in July, 1935, in the eastern Panhandle field with differentials in pressures of twenty pounds. The low pressure gradient was sixty to eighty. The low gradients on this map are in the oil area to the north. The blue band represents pressure from 220 to 240 pounds. The pressure then drops off from that band to the northeast rapidly to a pressure of 60 pounds.

[fol. 372] The producing properties of the Consolidated Gas Utilities Corporation are located between the 260 and the 280 band. The nonproductive areas are represented in almost every pressure differential band in Wheeler County. Our company has 1473.53 producing acres in Wheeler County. The bill of complaint alleged it to be 1397, but there was an error of 80 acres which we did not include. Our reserve as of October 1, 1935, was 101.9 billion cubic feet and our total reserve in acres is 10,273.53.

Our company has 12 producing wells. In percentages of potential the maximum per cent which we have ever taken from any one well is 12.09 per cent. The average taken from the very beginning is 4.89 from all wells. The highest per cent of the potential ever taken for one month from the entire 12 wells is 6.53 per cent. We are taking approximately 6½ billion cubic feet of gas per year from these 12 wells. The average is about 19 million cubic feet per day. The December order of the Railroad Commission fixes the allowable for these wells as 7 million cubic feet per day, approximately 12 million less than our market requirements.

Down to December 31, 1935, a total of 45,214,776,000 cubic feet of gas had been produced from the 12 wells. This represents a recovery of 4,490,000 cubic feet per acre, taking all the acreage owned into account. The production per acre from the 1470 odd acres on which the 12 wells are located amounts to 30,620,000 cubic feet. I have ascertained the volume produced from all the gas wells in the eastern Panhandle field which are connected to any pipe [fol. 373] line. The total number of gas wells connected to pipe lines in the eastern Panhandle field is 201 gas wells. The total number of wells not connected to gas lines is 121, which includes 105 which are now connected to gasoline

plants. The total production per acre from the wells connected to pipe lines is approximately 8,010,000 per acre. The average production per acre from wells not connected to pipe lines is 16,662,000. In figuring up these averages I am ta-king about developed leases or leases on which wells have been drilled and have produced.

The average rock pressure on the wells of the Consolidated Gas Utilities Corporation is 269 pounds. The average rock pressure of all the wells connected to pipe lines in the East Panhandle field is 305 pounds. The average rock pressure on the wells not connected to pipe lines is 222 pounds, or an 83 pound differential. The sum total of the drainage is from the wells connected to pipe lines to those which are not connected to pipe lines. It is a physical characteristic of gas that it flows from regions of higher pressure to regions of lower pressure just like water flows downhill. It is impossible for gas to flow from an area of low pressure to one of higher pressure.

In Exhibit No. 24 I have made a detailed study of the total gas withdrawn, the total acreage and the average recovery per acre and the rock pressures of these wells in the eastern Panhandle field.

The figure on Exhibit No. 23 which resembles the map of Italy is between the 320 and 300 pound pressure band, and was occasioned by the operation of the American Natu- [fol. 374] ral Gasoline gas stripping plant. These low pressure areas have in each case been occasioned by the withdrawal of gas for gasoline stripper plants. Some of these same strippers have obtained injunctions.

There is a comparatively small gradient in pressure drop until you get down to about 240 pounds, at which time you have an immediate drop down through the oil area to a minimum of 60 or 80 pounds. That steep drop is coextensive for the most part at that particular sector with the width of the oil field.

Exhibit No. 25 prepared by me portrays the number of wells in the eastern Panhandle field which have been drilled to sea level, within twenty feet of sea level or below that depth. The red circles indicate the wells which have been drilled to the water or approximately sea level, and the yellow circles represent wells which have been granted water exemptions as to the oil, and it shows all of the ga

wells which have shown any water by evidence of the tickets compiled by the Railroad Commission's engineers when their tests were taken in June and July for the first proration order issued in the eastern Panhandle field.

The lower part of the structure, as shown on the map, is the north boundary of the field which extends in a direction approximately northwest, and the formations in which the oil and gas are found dip into the water level located at approximately sea level. As you leave the water table going up formation, up-structure in the same formation, oil is encountered and then free gas. We have the same formations or conditions down there as portrayed by the cross-section which I have seen exhibited here, prepared by Mr. Peterson, and marked Exhibit No. 15.

[fol. 375] In general the conditions throughout the Panhandle field are the same. There are gas producing strata above strata in the same well bore which at a lower level produces oil. The ordinary distance between the gas producing formation and the oil producing formation in the same well bore depends altogether on the porosity and the thickness of the pay in that particular section. If porosity exists, the natural thing to expect after you penetrate the extent of the free gas is to encounter oil. I would say that you expect to find oil from 100 or 150 to 200 feet above sea level; it varies from one place to another. The wells on the extreme north side of the field are lowest structurally as portrayed on Exhibit No. 25, and they are in closest proximity to oil so far as the producing formation is concerned.

In my opinion there cannot be any active water drive in the Panhandle field. All wells showing water, with very few exceptions, have obtained that water by virtue of the curiosity and exploration for oil and drilling into the water level when the well was originally drilled, and of course the only thing that you could naturally expect is that you would make water, and you cannot punch a hole in a bottle without getting a little water out of it, and that is exactly what has been done here. And another thing, if there had been an active hydrostatic drive, these low pressure areas would have been replenished; in other words, the active force of that water under an active water drive would have tended to have equalized these pressures; these low pressure areas would not have been evident, but that water

would have made the pressure ranges in the reservoir [fol. 376] more uniform; in other words, it would have tended to bring the pressure up to a point which was equal to the amount of the water drive. By water drive or hydrostatic drive is meant the active encroachment of water which tends to maintain a constant pressure due to a flowing in of water to replace oil or gas which is taken out of the reservoir. If water were coming in to replace the oil and gas, you would have a predominance of water produced in the northeasterly wells along the body of the east field. I am confident you would have a great deal more water exemption than you have developed. It is the normal thing to expect that water to show up in wells which have definitely been drilled into it. There would be a very much more evident encroachment of water than is manifested by the data portrayed by that map if that were an active water drive.

We have a few cases where water has shown up away from the oil fields where the gas is encountered high in the structure. In the Lone Star Jones in Section 1, Block 24, the notation on the ticket said, "Salt water." This well had 330 feet of open hole and was one of the wells drilled in 1927. It would be impossible for that well to show any bottom hole water because the elevation in the well is 2403 and the total depth 1820.

It is remarkable and a compliment to the manner in which wells have been completed in the Panhandle field that we don't have any more high wells showing water than we do. There have been more than 3,000 wells drilled and each one of those has penetrated great thicknesses of salt and [fol. 377] the surface water above which would percolate down through, if you had a bad casing seat; it is remarkable the number of wells that are high that are only showing salt water. I would think there would be a great deal more. That water in there is occasioned by the percolation of water from above, down through the casing seat, and a small amount going down to the bottom of the well, or that salt water might have lacked the salinity that they remarked on the ticket and be then due to condensation in the well. The difference between the distance in the bottom of that well and the water level is approximately 600 feet. There are impervious layers between the bottom of that well and the water level.

We have a few other wells out in the formationally higher portions of the field. The Lone Star Troftle, Section 130, Block 23, the notation on the ticket was "made salt water." The elevation is 2466 and the total depth is 1912. That well would be over 550 feet above the water level. It was completed on June 24, 1928, and the only explanation for the occurrence of water in the case of that well is exactly what was given for the previous well.

The Fain-McGaha George L. Close, Section 54, Block 23, is near the south end of Wheeler County. The notation is "A spray of water." The elevation was 2489 and the total depth 1567. That well can only be explained in the same manner as the prior wells. That notation is more or less of a joke, "A spray of water." If you can predict a hydrostatic head on a spray of water on a thirty minute test, I venture to say you would have a hydrostatic head every place you test a well. That well was completed 900 feet [fol. 378] above sea level. Right in this immediate area is one of the big granite cores which occur in the eastern Panhandle field. It is very distinct, and there certainly would be no water on top of that.

In all cases over here in the oil area where you have oil exemptions, they vary from being drilled into the water to a thousand feet below it. There are twelve gas wells in the East Panhandle field showing water. There are 20 oil wells that have asked for water exemptions.

Our wells have been producing since October 10, 1928. They have not shown water.

Cross-examination.

By Mr. Francis:

The water exemption wells get some special allowable under the Railroad Commission regulations on account of the water production. I account for the original virgin pressure of 430 pounds which existed throughout this whole reservoir from the east end to the west end by the fact that the formations which we encounter in the East field outcrop in what is known as the Wichita Mountains, located approximately around Lawton, Blair and Altus, Oklahoma. The approximate elevation in the area runs, I think, about 1200 feet. With a lower source of inlet water pressure, your hydrostatic head, of course, would be predicated on the inlet of the water, which would be approximately 430

pounds, but that pressure throughout the reservoir of 430 pounds has been occasioned by the migration of waters from the Wichita over a period of what we call geologic time, which is reckoned in periods of hundreds of millions [fol. 379] of years, and that has occasioned the original pressure in the Panhandle field. The water which came down from the Wichita Mountains over a period of time corresponding with geologic time created an original gas pressure in the Texas Panhandle field of 430 pounds, but if you take on the basis of the length of time as we reckon time, the formations are not pervious enough to let that water keep encroaching to create a hydrostatic drive. The hydrostatic head originally created the initial or virgin pressure in this reservoir of 430 pounds, but the ability of the water to migrate now is dependent only on the gas pressure in the reservoir, because the impervious attitude of the rock from the Wichita to the eastern Panhandle field is such that you could not have an influence only by your gas pressure itself. That column of water does not still exert some pressure; I don't think you have an active hydrostatic head at the present time.

On Exhibit No. 25 the acreage owned by the Consolidated Gas Utilities Corporation is marked in red. There are wells south of the Rock Island Railroad on this exhibit which have had shows of gas. Many have been plugged in that area, but they have good pressure, relatively high pressure, and we certainly would not have got that acreage if we had thought it was nonproductive. As to whether or not there is a single commercial producing gas well in all Collingsworth County, it is a question of what you call commercial. There is not a single well that is now producing gas in Collingsworth County on a market basis. If you want to put it on a development basis in the eastern Panhandle field, we have 80 per cent of the acreage nondeveloped and 20 per cent developed. I am treating this [fol. 380] acreage in Collingsworth County as being proven acreage in my estimate of the reserves of our company. If this acreage is outside the zone recognized as part of the Panhandle field in the maps that have been introduced, I haven't introduced them; they are certainly not outside of the zone that I have estimated reserves for on the eastern Panhandle field. About 1500 acres of our property is located in Collingsworth County.

On direct examination I gave our reserve as 10,283.53 acres, and I gave you the reserve of 101.9, I believe it was, billion cubic feet of our future reserve as of August 1, 1935. Roughly, this would be ten million cubic feet per acre. As to whether, in order to make an estimate of what our future recovery reserves are, I had some figure in mind as to the original gas reserves in place per acre, I treated our acreage as of a basis of the weighted present rock pressure; I wouldn't attempt to go back and estimate the reserve under virgin pressure.

On a basis purely of our developed acres, we have extracted as much as thirty million cubic feet of gas per acre, but we have taken less than five million on the basis of total acreage held by our company. We have 1476.83 acres developed. As to whether or not the highest estimate I have heard of the amount of gas on an average per acre in the Panhandle is a maximum of 20 or 25 million cubic feet per acre, I have heard estimates as high as thirty-two or three million as a matter of record. Don Hughes and several others made those estimates. I don't mean to say [fol. 381] that they estimated that all the acreage contains that much gas; I said that there were some acres in the field that would hold that much gas.

I couldn't testify as a reputable engineer as to the average amount per acre under the reservoir as a whole. The only figure that has been accepted as the total reserve on the total Panhandle field, something like sixteen to seventeen trillion, and you can reduce that to an acreage basis if you want; there are approximately a million acres of sweet gas territory in that Panhandle field, and it is just a matter of calculation. You cannot estimate the gas under individual acres on the basis of averages.

We have already taken from our developed acres more than three times the average original reserve per acre in the field, if you want to use a yardstick of that kind; but certainly that is not on the point. That is certainly not the condition that actually exists within our acres.

Undeveloped acreage in Collingsworth County is about 12 miles from our developed acreage in Wheeler County, It is my testimony that gas migrates from higher to lower pressure areas, and it results in an underground drainage of gas from one property to another, due to pressure dif-

ferentials. If a system of uniform takings was put in force throughout the field, you would have less pressure drop from one place to another.

The pipe line which our company owns crosses the public highways of Texas.

On basis of my estimate of our present reserve being 101.9 billions with 10,283 acres, we have a reserve of approximately ten million cubic feet per acre.

[fol. 382] Redirect examination.

By Mr. Morgan:

I stated that 80 per cent of the area of the East Panhandle field is as yet undeveloped. By that I mean that 80 per cent of the acreage is composed of tracts of land on which no wells have been drilled.

Recross-examination.

By Mr. Francis:

As to what I mean by "undeveloped", illustrating it on Exhibit No. 25, and as to whether or not I would call this territory labeled A. W. Wallace tract undeveloped, I can cover all that in this question if you will let me answer it. To be specific, there is a total of 181,000 acres in the sweet gas field of the East Panhandle pool; the total developed acreage as shown by the Railroad Commission schedules, which allow 160 acres maximum per well or in the case where there is lease development there is just one well on 40 acres, we would call that 40 acres, there are some 34,000 acres, as shown by that schedule; that would be approximately 19 to 20 per cent of the total proven sweet gas area in the East Panhandle field. Therefore by "undeveloped", as I have used that term, it means 160 acre tracts on which there is not a well. I presume, when the expression is used in the West Panhandle field, they mean "developed acreage" of one well as to each 640 acres. There has been sufficient development in the drilling of wells in the East Panhandle field to definitely prove the proven acreage of that field is 181,000 acres.

[fol. 383] EVERETT CARPENTER, witness for plaintiffs.

Direct examination.

By Mr. Morgan:

My name is Everett Carpenter. I am a consulting geologist living at Amarillo, Texas. I obtained my education at Oklahoma University, and have had about 25 years practical experience in my field. I once occupied the position of Chief Geologist for the Empire Companies. I have been in the Panhandle for about six years. I once held an executive position with the Panhandle Eastern Pipe Line Company. I am familiar with the geological and production conditions prevailing in the Panhandle gas field.

I have seen Exhibit No. 5 and have studied its details. I am familiar with the location of the pipe line leases throughout the field. The prevailing pressure condition existing in the sour gas area is low.

Assuming that the findings of the Commission as stated in the order and the fact that it is necessary to bring the pressure down uniformly throughout the field in order to arrive at the greatest ultimate recovery of oil or gas, the allowing of 520 million cubic feet in the sour gas area against 608 million cubic feet of gas per day in the sweet gas area will not result in bringing down the pressure uniformly throughout the reservoir. The result of such allocation will increase the pressure differentials. If you want to bring about a condition so that the pressures can be brought down uniformly, you will have to take more of the gas from the south area and less from the north, that is, more from the higher area and less from the low.

[fol. 384] An order which requires the pipe lines to cut down the production from their wells with a pressure of some 160 pounds greater on the average than those of the wells to which they would have to connect, and to commence taking gas from those wells, will not correct the situation so as to bring down the pressure uniformly throughout the field. The practical result of such operations will make the pressure differential greater than it is now, and will cause gas to drain from the high pressure area into the low pressure area more rapidly than it is now. It will pull down the pressures, which are already lower than the pipe line pressures, and increase the dif-

ference between those pressures and those of the pipe lines. The inevitable result from the standpoint of the pipe line properties is that they would be drained of their gas. There has been drainage from the pipe line properties to the areas of low pressure to the northeast of those properties. This applies to the Texoma's property. The quantity of gas which has been drained from the properties of the Texoma Natural Gas Company and from the properties of the Consolidated Gas Utilities Corporation will be an enormous amount. Gas is being drained from Consolidated's acreage into that oil acreage just to the North of it. The drainage will be very rapid.

As to the general drainage condition of the whole area there to the north, northeast and to the south and southwest of the producing properties of Consolidated, as reflected by Exhibit No. 23, there is a pressure gradient all [fol. 385] of the way practically from the south edge of the field clear up to the north edge. The effect of those operations by which they have taken 5 or 6 per cent of the potential, a maximum of some 19,000,000 cubic feet of gas per day from 12 wells, is that they have merely captured a part of the gas that is moving in the general direction of the area from the south of them across them to this area of extremely low pressure to the north and northeast of them. That pressure band reflects that fact.

I have made a study of specific instances dealing with the allowables as between the sour gas and sweet gas area. In northern Moore County I compared two wells, the Texoma Dore 1-G on a 640 acre lease, potential of 12,950,000, and the Shamrock Burnett L-A on an 80 acre lease, potential of 14,998,000. One is on one side of the sour gas line and one on the other. The sweet allowable is 1,659,000, and the sour allowable is 3,747,000, or, reducing it to an allowable per acre, the sweet gas well has an allowable of 2.6 thousands per acre, and the sour gas well has an allowable of 46.8 thousands. There are two wells here near Sanford, one on the sweet side of the line and the other on the sour; the Phillips Land on a 20 acre lease, potential of 12,131,000; the Alamosa, the sweet well, has a potential of 11,376,000; the sweet well has 453,000 allowable and the sour well has 3,033,000 allowable. These are not Texoma wells. Other examples that I have checked from the allowable are on Exhibit 26.

I have prepared a study concerning the operation of this and all tracts of land, assuming a potential of 25,000,000 [fol. 386] cubic feet daily, ranging from 640 acres down to 10 acres. There are a good many tracts of land of 640 acres with only one well on them. There are tracts running into very much more acreage than that with only one well on them, but because of the fact that the Railroad Commission's order limited them to 640 acres, I wouldn't go beyond that amount. There are tracts of 320 acres that have only one well, and tracts of 160 acres that have only one well, and tracts of 80 acres, 40, 20 and 10 acres, under which they are granted one well under orders of the Railroad Commission. In my study I assumed a potential of 25,000,000 cubic feet and a per acre reserve of 15,000,000 cubic feet. These are not based on any particular well; they are assumed for purposes of comparison, although there are wells in the field with potentials of 25,000,000 cubic feet daily. The well on the 640 acres in the West Panhandle field will have an allowable of 2,099,000, which I have assigned as a percentage of 100. The per acre allowable will be 3,280 cubic feet. A 320 acre lease will have 1,506,000 and will be allowed to produce 71.5 per cent as much as the well on the 640 acres, and a per acre allowable of 4700 cubic feet. The 160 acre lease will have 1,209,000, 57.9 per cent of the 640 acre lease, and a per acre allowable of 5550. The 80 acre lease will have an allowable of 1,061,000, 50 per cent of the 640 acre lease, or a per acre allowable of 13,230. A 40 acre lease will have 987,000 allowable, 46.8 per cent of the 640 acre lease, and a per acre allowable of 24,630. A 20 acre lease will have 948,000 allowable, 45 per cent of the 640 acre lease, and a per acre allowable of 47,300. A 10 acre lease will have 931,000 allowable, 44 per cent, or a per acre allowable of 93,100.

[fol. 387] For the East Panhandle field, by going only to 160 acres because that is the Railroad Commission's limit, a 160 acre lease will have 645,000, a hundred per cent, or a per acre allowable of 3,890 cubic feet. An 80 acre lease, 535,000, 83 per cent, 6700 per acre; 40 acres, 430,000 66.5 per cent, 10,750 cubic feet per acre; a 20 acre lease, 377,000 allowable, 58.5 per cent of the 160 acre lease, or a per acre allowable of 18,850 cubic feet. A 10 acre lease will have 351,000, 54.5 per cent of the 160 acre lease, 35,100 cubic feet per acre allowable.

The inevitable result of the enforcement of such an order as between the man whose well is on a tract of 640 acres, and the man whose well is on a smaller tract, is to put a penalty on the man who has the large tract and a premium on the man who has the smaller one. In other words, the man who has his well on a smaller tract will get his gas in a very short time and then begin to produce the gas of his neighbor, while his neighbor is held down and unable to protect himself except by unnecessary drilling. A well will drain efficiently a tract of more than 640 acres in the West Panhandle field. The drainage gradient as established by the pressure contours on the map would indicate that that can be done. The pressure gradient reflected by this map here shows that gas is migrating from distances of several miles in the direction of low pressure.

In the East Panhandle field I think a well will drain more than 160 acres. As to how much more, I would say 640 acres usually. I wouldn't be able to say that 640 acres is the maximum that might be done, but I don't think that 640 acres is too large.

[fol. 388] I don't think allowables as they are distributed by the Railroad Commission, by which they permit the production of a great deal larger proportionate quantity of gas in the area already characterized by low pressure than they do back at the higher pressure, will correct an assumed water hazard or water danger from the creation of low pressure areas. The scientific approach to a correction of that situation, assuming it to exist, would be to let the gas pressures build up in the low pressure areas if there is a water hazard. If there is going to be any curtailing, it should be in the low pressure areas and the production should be from the high pressure areas.

Cross-examination.

By Mr. Francis:

I just cited examples of the exact amount that would be allowed under the formula under the Railroad Commission's orders. They give weight to well potential 50 per cent, and to acreage 50 per cent. It is true that in this Panhandle field the potentials of these wells vary even as between adjacent leases. As to whether it is true that when you take the potential of a well that that potential

reflects the ability of that well to produce gas, the open flow shows the amount that will come out against atmospheric pressure. I presume that it is the most accurate guage that is known to the engineering fraternity of determining actually what is the power of the well to produce. It is the one that is used.

It is also true that you cannot know exactly what a given amount of land will produce in the way of gas until you [fol. 389] have drilled it to see. You cannot tell in advance of drilling whether it will produce at all or not. After you have drilled you find areas which vary in potential figures of the wells, which probably is due to a difference in porosity, permeability or something of that nature. When House Bill 266 went into effect, became effective last summer, the conditions shown by Exhibits Nos. 5 and 6 was a condition that had already been created. It was already in existence. In this Panhandle reservior in the summer of 1935 there were several thousand different land ownerships and hundreds of different lease ownerships.

I do not know from an engineering standpoint of any way that gas can be prevented from flowing from a higher pressure area to a lower pressure area, regardless of what you might do, shut in the wells or any way that can be prevented. That is something that is just inevitable. If all the wells in this zone that Mr. Morgan referred to as the gray zone on Plaintiffs' Exhibit No. 5 were shut in and not allowed to produce any gas, it would be inevitable even under that condition that gas would flow from this western part of the field down to the northeastern part just so long as there was a difference in pressure between those two areas. That is something that cannot be prevented. I could not estimate as to how long it would take in geological years or time years or hundreds of years to restore the pressure from the northeastern part of this area to where it would become equalized with the pressures in the western part. I don't know how fast it is traveling through the [fol. 390] formation. Those pressure bands are probably expanding about two or three miles a year; that is a guess. That would be under conditions where stripping is going on and there is a large waste of gas due to these stripper operations.

Question by District Judge McMillan:

As to what is the abandonment pressure on those gas wells, whether it is 25 pounds, a good many fields or wells will become depleted to the point where it is not economical to operate them after the pressure reaches that point. I do not know whether any wells in the Panhandle area have reached that pressure or not. But I presume they will in time.

Cross-examination.

By Mr. Francis:

I presume whenever gas migrates from one part of the reservoir to the other it meets in the sand a certain frictional resistance. There is bound to be some friction against the force of the gas in the formation.

When I told Mr. Morgan that I did not consider that 160 acres was a reasonably efficient drainage area in the East Panhandle zone, I made that statement purely from a practical standpoint. I do not know anything about the physics of gas moving through formations. I was going altogether on the pressure maps that are on exhibit here. As to whether there are other factors that have to be considered, I cannot consider them; I don't know anything about them. I don't know what would be a reasonably efficient drainage area.

[fol. 391] R. D. Parker, witness for plaintiffs.

Direct examination.

By Mr. Morgan:

My name is R. D. Parker. I live at Austin, Texas. I am an engineer engaged in consulting petroleum engineering and appraisal work. I received my education at the University of Texas. For many years I served as an employee of the Railroad Commission, entering their employment in 1908 and continuing until June 19, 1934. I first served as Chief Engineer of the Gas Utilities Division, and in 1920, after the enactment of the Cox Bill placed gas utilities in charge of the Railroad Commission, I represented

that body at that time as head of that division for a period extending up to 1927, when I went into the oil and gas division as Chief Supervisor. I served as Chief Supervisor of the Oil and Gas division until the end of my service. I had occasion to advise myself concerning conditions of the character of the Panhandle oil and gas field. I made frequent visits to the field and held numerous hearings there. I also received monthly reports from the deputy supervisors in the field and consulted with them frequently.

In my opinion the Panhandle field is not a field which has an active water drive. If it had been a true water drive field and an active one, there should have been a more uniform and continuous increase of pressure along the northeast flank of the structure down dip and there should have been a showing of water throughout that area rather than in isolated cases of wells that probably were improperly [fol. 392] completed, drilled too deep or for some other reason were producing an excess amount of oil. In the Borger and contiguous areas wells were drilled clear down to the water level on into the water bearing formations during the early history of the field. The structural conditions were not known at that time and frequently operators drilled into water in an attempt to get as much hole as he could, that is, to take as much formation as he could into the well so as to increase the potential. Then a good many wells were shot into water. By that is meant nitroglycerin is put into the well to break up the structure and increase the productive face in the well, and it causes large holes to be created in the bottom of the well.

During the period, particularly from 1925 on for two or three years, there was a large production of gas in connection with the production of oil. This is for the reason that there was in the early history of the field no demand for gas and there was no regard for the value of it, and in addition to that the operators made use of it in gas lift operation in order to increase the production of oil after the wells had ceased to flow. That gas was largely wasted into the air and that caused the establishment of casinghead gas plants that made a market for that sort of gas. That caused an additional incentive to produce the gas in that way, because there was a market made for it for gasoline; that resulted in a very high gas-oil ratio throughout the oil area. The field is characterized by unusually high-gas-oil

ratios, in any event, by reason of the presence of free gas above the oil in the same producing formation and improper [fol. 393] completion of wells. The gas from the upper horizon is let into the wells by improper casing completion—casing seats as a rule or the casing has been ripped for the purpose of letting the gas in.

As to the efforts made by the Railroad Commission to reduce the production of gas in connection with the production of oil, there wasn't any effort made in the beginning. It was known to me and the Commission that low pressure areas were resulting from excessive production of gas in these oil fields. The pressure was going down rapidly back in the beginning. The enforcement of proration beginning in 1930 had the effect of reducing to some extent the production of gas from oil wells as an incident to the curtailment in the production of oil. There was no direct gas-oil ratio established or enforced. The first constructive effort was made in 1931 by the adoption of an order requiring the use of what is known as the miller head for reducing the amount of gas produced in drilling wells through the upper gas formations, and in addition requiring that casings be set low in wells that were to be produced for oil. That resulted in a reduction of the waste of gas during the drilling of the wells.

On December 30, 1932, a gas conservation order was entered which, among other things, provided for an oil-gas ratio of 25,000 feet to a barrel of oil. That order was not enforced because shortly after its adoption the Commission commenced in February to grant permits to strip gas, and it was regarded as impracticable to enforce an oil-gas [fol. 394] order in the face of the condition that was created by the adoption of the stripping permits.

I remember the enactment of a statute known as the Common Purchaser Law. Orders were issued by the Commission for the purpose of putting that law into effect, attacks were made in court and the laws held unconstitutional. Later the Commission passed an order known as the shut down order, which provided for closing of wells in a limited area, in northwest Gray and northeast Carson County, which required that all wells in that area be shut down until the owners of all wells in the area could secure markets for their gas, and at the same time limited the production of the pipe line companies to 4 per cent of the

potential in the remainder of the field. This order was likewise stricken down, by attack in the courts. Shortly afterwards the so-called market demand statute was passed dealing with the subject of gas, and orders were issued pursuant to that statute. The effect of these orders was to curtail the production and to allocate it among the producers in the entire gas field. These orders were stricken down. Following the decision of the court on the market demand case, no orders curtailing the production of gas were entered in the Panhandle until the orders issued effective the 1st of August, 1935.

By a stripping permit I mean the extraction of gasoline from dry gas through plants constructed for that purpose. The issuing of stripping permits resulted in an acceleration in the production of gas in the Panhandle. It is generally known that enormous quantities of gas were being pro- [fol. 395] duced and stripped of a small gasoline content and the residue popped off into the air. That production amounted to approximately a billion cubic feet a day. These facts were known to the Commission.

I have given the present Railroad Commission's orders some study. That portion of the order beginning on the fourth page from the last, which deals with the subject of gas-oil ratios when applied to operating conditions in the field, will cause an excessive production of gas from oil wells above the supposedly 10,000 cubic feet oil-gas ratio provision of the order. As to the number of wells in the field which have a gas-oil ratio of more than 10,000 and less than 100,000, the figure named by the statute in defining a gas well according to figures put out by the Pampa office last January, there are 329 wells in that classification which produced at that time 5589 barrels of oil. Under the operation of that order any one of those wells can produce as much gas as is being produced by the largest producer of gas, that is, under 10,000 cubic feet per barrel. Under the operation of this order as construed by the letter of K. I. Dunn, Deputy Supervisor, any well which makes as much as 11.7 barrels of oil can produce 1,172,000 cubic feet of gas, regardless of whether it is necessary to produce that gas or not. I am advised that the largest producer of gas among the oil wells is Skelly Johnson No. 4 in Wheeler County. Any oil well in the field is permitted to produce 1,172,000 cubic feet of gas.

[fol. 396] Cross-examination.

By Mr. Francis:

It is my testimony that the last order of the Commission fixing gas-oil ratios in the Panhandle fixed them at not exceeding 10,000 cubic feet of gas to one barrel of oil. It provided for the granting of exceptions, which, in effect, authorize the production of 1172 thousand cubic feet to any well producing approximately 12 barrels of oil. Before the enactment of House Bill 266, the gas-oil ratio in the Panhandle field in many instances ran up to as high as half a million or more. It looks like, on the face of the Commision's order, that the Commission is reducing the gas-oil ratio down to 10,000 to 1 with exceptions granted where unusual conditions are shown, but the practical application of the order as written doesn't do that, in that the exceptions provide a method of defeating it. I do not see how you can increase the conservation movement by increasing the production of gas or increasing oil-gas ratios. The idea is to reduce the oil-gas ratio as much as you can, to reduce the dissipation of gas energy in the field. The idea of the displacement factor was adopted in the Saxet field in 1932, I think, by the engineers of the Commission while I was supervisor. The displacement factor which was originated in my administration as applied in the Saxet field is not exactly in the same form as the Commission is applying in the Panhandle field. Originally the purpose of the displacement factor was to authorize the owner of a well high up on the structure which produced no oil at all to produce something from the structure [fol. 397] in order to get some profit from it if he could. The displacement factor which was adopted with my approval originally in the Saxet field involved wells that produced gas only from oil and gas formations.

It is true that the Panhandle field has a very different development than any gas field in this State, because, while the sour gas law was in force, that law applied only to the Panhandle field. The pressure differential conditions which are shown by Exhibit No. 5 existed in the field when the Legislature started to deal with the problem in the early part of 1935. It is true that there were many wells in the field that had no connection with light, fuel or to stripping

plants. It is also true that at that time there was being wasted in the air many million cubic feet of gas per day, running up to a billion cubic feet per day, through stripping operations. As to whether there was beginning to show up in a large percentage of the wells drilled in the Panhandle field, running up almost as high as 20 per cent of the total, water in wells scattered throughout that field, I don't know what the percentage was; water showed up in the oil producing area and it never became a factor in the gas producing area.

I don't know it to be a fact that around the Cargray stripping plant and adjacent to the wells of Texoma there were strictly gas wells in that area, and were in that area last spring, which were wells drilled down to more than a hundred feet above this water stratum below the producing formations, in which gas wells, properly cemented and cased, water was showing up in large quantities due to [fol. 398] localized and excessively large withdrawals of gas. I don't think it exists there.

The gas in the sour gas zone contains hydrogen sulphide and in the sweet zone it does not. Sour gas is not fit for lighting and fuel purposes unless it is scrubbed and purified. This is not regarded as practicable at this time. Sulphur gas can be profitably utilized in the manufacture of carbon black. Sweet gas generally is considered in the industry and has been for some time considered of more value than sour gas. Sweet gas could be used for carbon black, but it is also useful for light and fuel, while sour gas cannot be used for light and fuel, but can be used for the making of carbon black. The sweet gas contains less gasoline content, than the sour gas as a rule.

There were differentials in pressure existing between the sweet and sour gas area in the spring of 1935.

I drew the order, when I was a member of the Commission's staff, which granted the Cargray plant a permit to operate. I did not pass upon the question of whether or not, under the circumstances, the permit should be granted. This permit is Exhibit No. 31.

I think it is substantially correct to say that the Saxet field which I mentioned a while ago is the field that produces both oil and gas, and in many instances there is oil produced from the same strata, just as in the Panhandle field. That is the field in which the displacement factor was first

inaugurated during the time I was with the Commission and was restricted in its application to wells producing [fol. 399] gas high up on the structure, and not to wells producing both oil and gas in an oil and gas bearing structure.

Redirect examination.

By Mr. Morgan:

I did not recommend the granting of the permit which is Exhibit No. 31. I wrote it because I was called on to write it.

There are 329 wells in the Panhandle which have gas-oil ratios between 10,000 and 100,000 that would be affected by that letter of Mr. Dunn's. The quantity of gas that could be produced under and above the 10,000 limit is 329,000,000 daily. It would come out of the oil area, which is the low pressure area.

Recross-examination.

By Mr. Francis:

This differential set up in the field shown by complainants' Exhibits Nos. 5 and 6 existed in 1932 in the oil area, and existed as far back as 1930 and 1931. The creation of those differentials commenced back in the beginning of oil production about 1926, when the withdrawals were from the oil areas and not from the other.

[fol. 400] B. B. Boatwright, witness for plaintiffs:

Direct examination.

By Mr. Morgan:

My name is B. B. Boatwright. I live in Golden, Colorado. I am head of the petroleum engineering department and Professor of Petroleum Production at the Colorado School of Mines, and have been for a little over 7 years. Prior to the beginning of my service as professor, I was engaged in the production engineering phases, primarily, of the oil and gas business. I have an engineering degree from the Colorado School of Mines.

In connection with my studies, I have had occasion to inform myself in the subject of physics. I am familiar with such terms as "energy" and "energy of gas under pressure", "water drive" and physical terms of that character. From September of 1926 until May of 1928 I was District Engineer of Marland Oil Company at Borger in the Panhandle field. My duties included all phases of production engineering work that come up in the field. That was in the early part of the history of that field and in the area where the major portion of the development was then taking place. A great many of the oil wells of that particular period were drilled to a position 20 feet or less above sea level. A great many of them were drilled into water. Where a well showed water, an attempt to plug it back was made as a general rule. By plugging back I mean to lessen the depth of the hole by putting a plug of some sort, such as cement, in the bottom of the hole and filling the hole with that substance, which, of course, set [fol. 401] and seals off, or is supposed to seal off, the water bearing formation from the oil producing horizon. We found in our experience there in the Borger field that the percentage of successful shut-offs, that is, for a period of a month or more, ran in the neighborhood of forty per cent, and in the balance of cases we might partially shut off the water, but not completely, and we found that in a large number of shut-offs which had been previously made, the wells began to show water again, indicating a leaking plug. The physical reason for a plug holding for a while and then beginning to leak is the presence of sulphates in the bottom hole water, which would react on the cement plug and cause it to deteriorate.

I have kept up with the developments of the field down to the present time, and have examined a great number of the logs of the characteristic portions through the entire length and breadth of the field. I have done this recently in my preparation for presenting the facts before the court in this case.

In my opinion, the field is not under an active water drive. If it were, the water encroachment throughout the field would be general, instead of being spotted in the sense that the wells that are making water are commonly surrounded by wells which are not making water, and also the so-called water areas, such as the Borger area, are

isolated from the edge of the structure through which the normal water encroachment should come by areas which do not produce any water, and also the wells show varying fluid levels at different periods of their life even before [fol. 402] water itself encroached in the well.

When I was engaged in the Borger area, we found that in the virgin areas the water level rose approximately a thousand feet. As the low pressure area was developed, we found that the water column height in the well itself decreased. As to the evidence showing here that as against the original thousand feet to which the water would rise in a given well bore, in that same area now it will rise only two or three hundred feet as a maximum, that is right. My deduction from this is that the field is not under an active water drive.

I account for the circumstance that the water will stay in the well bore at all by local conditions primarily. If we have a well which has been drilled into water and the water rises in that particular well, the pressure which causes that rise of water comes from some place in the vicinity of that well, and the height to which that water will rise is a result of the pressure somewhere in the vicinity of the well, rather than coming from the virgin territory or the outcrop toward the Wichita Mountains.

There is undoubtedly a very close relationship between the 430 pound pressure that prevailed throughout the field originally and the assumed outcrop away in the Wichita Mountains at an altitude that causes a column of water from there down to the water level here to weigh 430 pounds to the square inch. But that only accounts for the original virgin pressure in the field. The resistance of that formation over that long area with the intercommunicating shale lenses and other formations simply precludes [fol. 403] the flow of fluid through that formation to any appreciable amount in anything that would be measured by human lifetime. While undoubtedly that water in there accounted for the bottom hole pressure of the field itself, still the resistance through the formation would be so great that it would be impossible that water flow in as we take the oil and gas out, and I base that opinion on the way that he field acts as a whole.

It is a fact that there might be water coming from the outcrop up here in the Wichita Mountains at an elevation

of a thousand feet that would account for the movement of the water into the bottom of this reservoir at a very slow rate, due to the existence of the formation between the source of the water and the location of the reservoir. During a geologic age that might bring in the water, but for any practical purpose the movement is so slow that it is impossible to bring about what is known as the water drive.

I have a mechanical device by which I can illustrate the circumstances that, due to the pressure of the gas around a given well bore, the water will rise in the well bore without a water drive behind it. This is merely a bottle filled with a colored fluid, water with ink in it, and a rubber stopper with a small amount of air over the top of the water, and a bulb that is capable of putting a little pressure on top of the water, and a tube which extends down in the water and which represents, as far as this field is concerned, the conditions of a well drilled into water, and this merely to illustrate the point I am making, that the level to which the fluid in the well rises is a function of the pressure [fol. 404] in the vicinity of that well within a relatively short distance as compared with the distance of the outcrop in the Mountains. Those contacts right up in the edges of the field might possibly be due to water-gas contacts and in case of places inside the field that water-gas contact may be the result of wells which were drilled into water and which artificially created a contact between the gas which is present in the field and the water.

If we take this device here, and we put pressure by squeezing this bulb upon the gas, which is over the top of the water, that fluid will rise to the same position in the tube, which is a measure of the pressure which is exerted on the top of that water. In geologic time that pressure was caused by the head of water from the Wichita Mountains, but due to the fact that the permeability of the formation between the Wichita Mountains and the edge of the Panhandle pool is so high, it is impossible for that water head to be effective and deliver water into water formations underlying the field rapidily enough to cause what we call an active hydrostatic head, although during geologic time there was enough feed of water into the edge of the formation to build the pressure to the original pressure. As the field was developed and the gas was dissipated, and

as the pressure declined, which can be illustrated by releasing the pressure on this tube slightly, the fluid levels dropped, and that is exactly the condition that we find in the Borger field or in the Panhandle field. That accounts [fol. 405] for the fact that in different portions of the field we find different fluid levels, and in virgin portions we find fluid levels around a thousand feet, indicating that the original pressure is there, and then as the field has declined and the gas pressure has dropped, the height to which the fluid in any particular well rises is merely a function of the pressure exerted against that water column at some point in the vicinity of the well and at a relatively short distance from the well as compared to the distance of the Wichita Mountain outcrop.

This sketch, which is Exhibit No. 32, follows up Mr. Peterson's idealized cross-section of the field and is merely a graphic illustration of this experiment. It is immaterial, so far as my idea of water encroachment is concerned, whether there is a definite shut-off between the Wichita Mountains at the present time or not. The effect is the same regardless of whether we consider the Wichita Mountain outcrop shut off by shale lenses or deposition of drilling interstices of the formation, but there is a definite connection, and the resistance of the formation is so great that it will not let any fluid travel from the Wichita Mountain outcrop and be active in the field, and give rise to what we call an active water drive.

We assume that we have a well drilled through the gas formation and through the oil formation and down into the water zone, and we find that the fluid will rise in that well to some position, which I have arbitrarily designated as this point here (indicating). In order to explain the fact that [fol. 406] in different wells we get different water levels under each different condition, we consider this contact here. We have, by production, depleted the gas pressure from this lens, which is pictured in red, and have created low pressure against the oil column. Then your pressure gas is pressing against that oil, which is practically incompressible. The oil in turn exerts pressure on the water somewhere in the vicinity of that well. Due to the fact that the formations throughout the Wichitas are impermeable as far as pressure is concerned over any reasonable length of time, the pressure is going to seek an

outlet, and for that reason the pressure will be exerted in the direction I am pointing. That pressure is transmitted uniformly throughout that water and causes the water to rise in this particular field.

As far as the water fluid level in this well is concerned, it makes no practical difference whether we connect the gas and the water by means of the edge of the field, or by wells which were originally drilled into water and which went through the oil and gas formation.

Coming over to another well, the gas wells are drilled through the gas formation but are stopped before they have any contact with oil or water. That means there is an appreciable depth of stopment, and a study of the logs of the field shows that almost invariably in the field there are numerous shale lenses throughout and dense dolomite and lime, which preclude the possibility of any water encroaching up from here (indicating) through the formation and getting into the well itself. Therefore, when a gas well [fol. 407] shows water, it can almost invariably be traced to some water well or some well which was drilled into water, and through which the water has been allowed to head-up and get into the gas formation and then into the well, and it is impossible for the water to get from the water formation to the gas well unless it comes through the gas horizon, and there are lenses, a dense shale lens a very few inches in thickness is enough to preclude the possibility of water rising vertically.

Another point in this connection is that this pressure is very low. It is abnormally low for the depths to which these wells are drilled, and the tendency of water to penetrate any formation is a function of the pressure differentials that exists. If we have water under a pressure of 430 pounds, and assuming we have a well with a zero pressure, that means that we will have under the most adverse conditions, as far as water encroachment through the differentials is concerned, a maximum pressure of 430 pounds. In most water drive fields we will have a differential at that depth of a thousand pounds. Here in the Borger field we are particularly fortunate in that we could drill a whole lot closer and still not have any water encroachment at that depth.

In view of my statement that water can not be coned up under the conditions that exist in the field, the fact that water is showing up in the bottom of many oil wells can

be explained in a number of ways. Adjacent wells in the vicinity of the well that shows water may have been and [fol. 408] probably were drilled into water, and in that case, of course, we have gone through and penetrated those shale lenses that hold it off and the water can come in, provided we hit porosity somewhere before we hit the bottom of that well. In the case of wells which still have an impermeable layer here (indicating), and which show bottom water, that bottom water must have come in through some adjacent well, through the well itself, the pressure is built up here and feeds through the formation and into the well in which the bottom water is encountered. There are other ways in which wells can show water which may not be bottom water. For instance, if we have a bad casing seat, there are at least three water horizons between the surface and the bottom of the well, and the water would flow into the well bore and down around the casing. It requires a close analysis to determine whether or not the water which is found is bottom water or is top water which has filtered down.

Applying this principle to the Borger field, in my judgment the water that is showing up in the bottom of the Borger wells could not be edge water which has been channeled in from the water level up the producing formations. We have a relatively good oil area in this area, with higher pressure than in the Borger area itself, and with no water, or very little water, showing in any of the wells, and the larger of the wells are dry. I don't know whether there are any wells in there which are not making any water at all, but, at least, if the water is coming from the outcrop of the Wichita feeding throughout the underground forma- [fol. 409] tions, in order for the water to have gotten into the Borger pool it must have come in around the edge somewhere, and the fact that we find certain areas in between the low pressure areas and the place we would normally expect the water to encroach, indicates to me that there is no active water drive. If there were water drive back of the oil, we would expect the water to come in and drive the oil ahead into the low pressure area, but that has not happened, which is just another illustration of the impermeability idea that I was talking about a while ago, that is, the retarding character of the formation in which the water is immediately located.

As to the meaning of the term "energy" as that term is used in connection with gas under pressure, it might be well to lead up to the subject by some rather simple analogy. If a weight of a certain number of pounds is lifted through a certain definite distance, work has to be done. If we lift a pound weight through a distance of 550 feet, we say that 550 foot pounds of work have been done in lifting that object, and if we introduce the element of time, if that 550 foot pounds of work is done in the period of a second, we call that a horse power. Exactly the same conditions obtain in gas, and when gas expands it does foot pounds of work. In order to understand that, it is necessary to understand a few of the fundamentals of gas and the difference between a gas, a liquid and a solid. All matter is made up of small particles which have certain definite movements and which are spaced by certain definite intervals from [fol. 410] each other. In the case of a solid, particles are very close together and the material resists distortion of form to a great extent. In the case of a liquid, the particles are farther apart and the fluid does not exert nearly so much resistance to distortion of form. In the case of a gas, the particles are very much further apart and offer very little or no resistance to distortion of form. The characteristic of gas with reference to filling a container is that it will completely fill the container and spread itself out thin enough to fill the container, and that any place you would take a sample of gas it would be uniform. It would be uniformly distributed over the container over a period of time which may be great or small, according to the resistance offered within the container.

Exhibit No. 34 is a diagrammatic illustration of the Boyles' Law, which states that the pressure times the volume under isothermic conditions is always equal; any gas under conditions of pressure and volume, the product of the two is equal. This simply ilustrates the pressures which are represented here by four one-pound weights and a volume of one cubic foot of gas, and those pressures, of course, must be absolute. If we take off two of those pound weights, we have a pressure of two pounds, and find that the volume occupied by the gas is exactly twice as much. We have carried the illustration one step farther and again divide the pressure in two with an increase of double the volume here or four times the original volume, the point

being that the product of the pressure times the volume the [fol. 411] increase is the same. In making the application to conditions that prevail in the Panhandle, with a particular reference to a loss of energy as a result of producing all the gas from any number of wells, or while other wells are not producing and otherwise, I merely want to illustrate the fact that when gas actually expands it does work in the same way the lifting of a weight does work. If we consider this cylinder with a piston and an original volume which is represented by "V," and an original pressure which is represented by "P," a piston whose area is "A," and we allow this gas to expand a very small distance, "X," the distance being so small that the pressure in the container that is essentially "P" at the end of the expansion, if we multiply the pressure times the area that would give us the total pressure against that cylinder, and that is the same as weight, and if we move that through a small distance, we have foot pounds of energy developed, and if we carry that through any number of feet, of course, we do a certain amount of work, and by taking all of these small increments of work and adding them all together we arrive at the formulas which we use to calculate expansive or compressive work, or work that is necessary to compress the gas and which is gotten out of the gas upon expansion, and if that is carried on at a constant temperature, we term it isothermic work, aid if it is due to the fact that rates of expansion are very slow and that the cooling effect on that account is very slight, and also due to the fact that the relation of the gas in proportion to the formation is relatively small, it doesn't make much difference whether we assume [fol. 412] that there is an isothermic reaction underground or whether there is some slight loss in temperature as far as the gas is concerned and as long as the pressure drop through any given distance is not too great.

In the application of any of the gas laws it is necessary to use absolute terms, and the exhibit at the top on the left illustrates why this is. Atmospheric pressure at various points refers to surface conditions depending upon the distance above sea level. I have shown two pressures here which are the same; I have platted the pressures by taking distance instead of time. You see the gauge pressure, if we just put a gauge on there and register the pressure for that atmosphere, in the two cases the absolute pressure will be

entirely different, and for that reason in gas work we must use absolute pressures rather than gauge pressures, and atmospheric pressure is simply the weight of the column of gas from the surface of the earth to the outer limits where the gas does not occur, and that is measured ordinarily by a barometer which indicates in terms of inches of mercury or pounds per square inch the pressure that that atmosphere is exerting.

Addressing myself to Exhibit No. 36, this chart is designed to illustrate graphically the fact that it does not make any difference, as far as the energy which remains in the formation is concerned, as to whether we take the gas out of one well or out of 50 wells, and it does not depend upon their displacement or their distribution throughout the field, the amount of energy that remains in the formation after we take out a certain number of cubic feet of [fol. 413] gas will be the same, regardless of whether we take it all out of one well or out of any number of wells. In this illustration marked "B" on Exhibit No. 36 I have arbitrarily chosen two containers connected by valves, both of which contain a thousand cubic feet of gas at a pressure of 445 pounds per square inch absolute, which is approximately the original bottom hole pressure in the Panhandle field and is calculated to contain 7,200,900 foot pounds of energy each. The calculations were made to show the amount of energy that that gas under this condition would contain in comparison to a cubic foot of gas under standard conditions, which are 14.65 pounds and 60 degrees. In this case we isolate one of these tanks and allow the other tank to produce until all the gas has flowed out into the atmosphere, or, in other words, until the tank contains only gas at atmospheric pressure, 14.65 pounds, which is the standard Mid-Continent basis. We found that the original energy contained was twice 7,200,900 and the original energy in the two then being 14,401,800 foot pounds of energy. We know that in this case we have not touched this one tank; therefore, the energy that is in there is 7,200,900 foot pounds. The energy then that was removed from this one cylinder is 7,200,900 foot pounds. We open this valve here and isolate the system, closing this lower valve and opening the upper valve, and we allow the gas to flow from this tank into this one (indicating). Now that gas has to do work in doing that, and we have calculated the work that

was done and we have the same conditions; we have the thousand cubic feet of gas expanding from 445 pounds per [fol. 414] square inch absolute to 2000 feet of gas, each of which will have a pressure of 229.82 pounds per square inch absolute, and that did a certain amount of work. The energy that remains after we get through this step is 5,998,200 foot pounds, or, taking the difference, the energy that was consumed in this step is represented by 1,202,700 foot pounds of energy, and adding that then to the original energy that was lost in this step (indicating) we find that the total energy that was used up was 8,403,600 foot pounds of energy. We took that out in two steps and that could be correlated back to the field in taking it out with one well to taking it out in another, and this could be carried to infinity, that is, by considering groups of wells, all of which are taking different amounts.

Now, then, let's take into consideration here where we allow each tank to produce exactly the same area and see what the energy remaining is. In this step (indicating) we have allowed one well to produce more than the other. In this step (indicating) we are going to allow both wells to produce exactly the same amount, and we are going to apply the total amount of the energy that was used up to the total amount of energy that remains in the formation, and then we are going to see where that energy went. We allow each tank to produce at exactly the same rate and we arrive down at exactly the same final conditions which we have here (indicating), which we know gas will do because it is going to diffuse and fill the space completely that they keep it in. The original energy was 14,401,800 foot [fol. 415] pounds, so that calculated in exactly the same way as it was up here, the energy remaining in the gas when it gets down here (indicating) is represented by 5,998,200 foot pounds, and the energy that was removed then in this step was 8,403,600 foot pounds, which you will notice is exactly the same as the amount of energy removed here. You overcome the resistance of the formation in causing that gas to flow at the expense of the gas energy which is produced on the surface. The producer of that gas pays that energy bill of transmissal in the lowered pressure of the gas that comes out of his given well. As far as the bottom hole energy conditions are concerned, it doesn't make any difference whether you take it out of one

well or fifty wells or a thousand wells, the energy remaining in the formation is exactly the same. In other words, there is absolutely no underground wastage of energy. The bill for transportation is paid by the producer in the lowered pressure of the gas as it comes out at the surface of the well, which under the present conditions is ordinarily dissipated to a great extent anyway through chokes, pipe line resistance and so on, and it becomes merely a matter of economics then as far as the production of a well is concerned and balancing the bill he is willing to pay for lost energy in transporting through long underground distances. If instead of representing one well, each of these tanks on Exhibit No. 36 represents a hundred wells producing from the same reservoir, and you have a hundred wells not producing located at varying distances from the producing well and you produce, say, a hundred billion cubic feet, [fol. 416] there will be absolutely no difference in the remaining energy in the formation whether it is produced from 100 wells or 200 wells. As long as you take gas from one well or from one area, the gas from the surrounding areas of high pressure immediately starts in the direction of production. If you shut down every well located in the area which portrays pressures of 200 or less, the gas would continue to move in there to equalize pressures over a period of time, although the rate of encroachment would not be nearly as rapid as though you were taking gas out of those wells.

If you produce a million cubic feet of gas under a pressure of 200 pounds; you will not bring out of the reservoir with the gas that is produced as much energy as if you produced it up here where the pressure is 300 pounds. The difference in energy will be the energy which was used up in causing the underground migration from the high pressure to the low pressure area, using "O" as representing the 200 pound pressure well and "S" the 300 pound pressure well. This lost energy is paid for at the surface by a lowered pressure in the gas as it comes out of the well.

The energy that is used up is in the gas that is produced, not the gas that remains in the reservoir. Whether you produce a million cubic feet of gas at "S" or at "O", the energy of the gas that remains in the reservoir is exactly the same when the equilibrium is restored.

As a practical proposition, gas is not produced at 430 pounds pressure at the mouth of the well if the bottom hole

pressure is 430 pounds. If a gathering line has lines con-
[fol. 417] nected up to it having varying pressures from 200 pounds up, gas will have to be fed into the gathering line at pressures below 200 pounds. If you put it in at a higher pressure, it would simply feed back unless there was some check valve device, or the high pressure wells would do all the delivering. You could not deliver gas from the low pressure wells into the line if the gas as it came into the line was below the pressure of other wells producing into the same line. If a man has to feed gas into a pipe line at 200 pounds, it is no benefit to have his gas produced at the surface at a pressure of 300 pounds. As a practical proposition, he reduces his pressure.

Assuming that the producing of gas from one well while other wells are not producing would cause a loss of energy as a result of migration, the wells in the higher pressure areas should be allowed to produce more gas than the wells in the lower pressure areas. The average pressure of the pipe line wells is 130 pounds in excess of the wells not connected to pipe lines. If you cut down the present rate of production from the wells connected to the pipe lines and assign a part of that production to wells with 130 pounds lower pressure, you are going to produce that gas after migration rather than before. If there is to be a saving of reservoir energy as a result of migration of gas, the production should be from the wells connected to the pipe lines. The same thing is true in the East Panhandle field. The discrepancy that obtains in the pressure between the sweet and sour gas areas will, under the operating effect of the Railroad Commission's allowables to each of those areas, cause migration.

[fol. 418] Assuming that at the time the field was first discovered there was contained in the gas within that reservoir under 430 pounds pressure a given quantity of gas energy, that energy could only be removed from the reservoir by production.

Cross-examination.

By Mr. Francis:

I will be glad to make a further demonstration with the experiment which I conducted before the Court a moment ago. I will elevate the glass tube just up above the fluid level so that the tubing does not get into the liquid. The

tubing is now above the fluid level. If you press on that bulb the fluid will obviously not go up into the tube. The gas will come up. I have the same instrument that I used in the first experiment but have now placed the glass tube which represented the well above the fluid column, which fluid column I used a moment ago as an illustration of the water which lies immediately below the strata which produces oil and gas. When I now pump with the little rubber pump that is attached to the glass containing the fluid, the fluid does not rise in the glass tube, which tube represents the well. As to why the fluid does not rise into the glass tube, this is merely an illustration of gas drive between two wells, gas migration between two wells. This well, for instance (indicating), is above the water, disconnected from the water; it is separated from the water by an impermeable layer. This well is in the same condition. You have gas in one well in a high pressure area migrating over into [fol. 419] a low pressure area; this is an example of gas migration.

I have been demonstrating to the Court, that if a well is drilled into the water reservoir, that gas and the pressure of gas from other wells may cause a lifting of that fluid up into the well bore. If you find in the Panhandle field numerous gas wells that are not drilled down into the structure containing water, the casing being set and cemented hundreds of feet above the formation that contains water, and in that type of well you find the well producing large quantities of water, you could draw the conclusion that that water column is exerting a hydrostatic head pushing upward through relatively porous stratum and into the wells which are producing from the gas formations above the water formations. I would not, however, draw that conclusion. The conclusion can be drawn that there is an active water drive being exerted through relatively porous formations, whereby the water which created this virgin pressure of 430 pounds is pushing upward through pervious sand into that gas formation. This illustration that I gave at first can be used to explain that very condition just as well as an active hydrostatic head. Either one would explain it if all the wells in the field did that; yes, there would be no argument.

As to my explanation of the appearance of substantial quantities of water in such wells as you have asked me to

assume exist in the Panhandle field, I would assume that this has happened; At some point in that formation, we know that throughout that field there have been wells [fol. 420] drilled into water, in certain areas, of course. Those wells are much farther off than they are in other areas, and the pressures on those particular wells vary between wide limits, as illustrated, by those pressure bands. To me it is much more reasonable to assume that the hydrostatic head that occurs in this assumed well that you have set up came from those pressures; it is much more reasonable to me to assume that the pressure originates somewhere close to the well than in the Wichita outcrop, especially in view of the fact that it is an isolated case and not anything like the ordinary water drive field, in that there is no line of water encroachment shown. In order to agree with my conclusion, it is not necessary to assume that all of the structure between the water structure and the gas and oil formation is, relatively speaking, a uniform and impervious structure, impervious to water coming through under a hydrostatic head. I deny that there is an active head of 430 pounds originating in the Wichita Mountains.

I don't say at all that I deny that there is beneath this oil and gas formation a body of water which is an active pressing agency exerting a pressure against the formation above it of 430 pounds. I tell the Court that there is below these formations which produce oil and gas a formation containing water, which water has a pressing agency equivalent to approximately 430 pounds under static conditions. That means that, if all the wells are closed in here and this reservoir was not producing gas or oil, water would be pushing up with a force of 430 pounds pressure as it was originally. It does not follow that, if that is true and you release pressure from above the water formation and that [fol. 421] 430 pounds of pressure of water continued and there are pervious structures between the water formation and the oil and gas formation, that the force of that pressing agency in the water of 430 pounds will press through there and up into the oil and gas formations. Suppose we have a tub here full of water under 430 pounds, if we open a little valve there you would expect a column of water to extend up a whole thousand feet. The thing that releases that pressure is the coefficient of expansion of water, and unless that tub is big enough so that the coefficient of ex-

pansion would fill that thousand feet of hole, it might go ffft, and that is all there is to it; as a matter of fact, when they open these big valves, that is what they do, and you don't have a thousand foot column of water when you open the valve.

It is true that when the pressure is released by the extraction of large quantities of oil and gas, there is a tendency to release the pressure of the water so as to push the water column up into the holes. There is a tendency provided there is some force or energy pushing down on it to continue that flow, but if you are going to depend entirely on the coefficient of expansion of water, you have to have an enormous body of water to give you that. I have no absolute proof of the fact that there is not a continued infiltration of water from the Wichita Mountains so as to keep and maintain substantially a pressure of 430 pounds. I can only state it by deductions. That is all that anybody can do.

To a general extent I am familiar with the hydrostatic head of water which acts as a motivating power in the [fol. 422] production of oil in the East Texas oil field. I know that engineers at the outset of that field were divided into two camps as to what was the influence of that column of water and the effectiveness of the hydrostatic head in the production of oil in the field. They were not in the same situation in the Panhandle field, because the great preponderance of evidence is in favor of the theory I have propounded. There are doubtless engineers and geologists who disagree with that theory, but I think you will find that the predominance of engineering and geological opinion favors my theory.

When I mentioned the ability of this gas to migrate and said that in time all the pressures would equalize, as illustrated by Exhibit No. 5, I was speaking of an appreciable length of time of many, many years. From the fact that the original Masterson well up here that has been in for 18 years still has a pressure within 18 pounds of its virgin pressure with all of this tremendous amount of gas having been produced, I would infer it would be hundreds of years before there would be an equilization. You cannot pick a particular well and prognosticate what that field will do on the basis of that particular well, because underground conditions have a lot to do with it.

About a third of the Panhandle field, as shown on the pressure map, is still in areas from 400 pounds up. I do not think it is a practical matter, from an engineering standpoint, for us to wait these geological ages I have been talking about before we can produce this gas on an equita- [fol. 423] ble basis so as to accord each one his right, when I say that it will take possibly hundreds of years before that reservoir can become equalized, but I certainly wouldn't do it by withdrawing large amounts from the low pressure area and smaller amounts from the high pressure area. If I had the theoretical power of a Czar, I would produce those wells at such a rate that the zone of each individual well wouldn't affect the other wells; in other words, to maintain as nearly as possible, from the standpoint of production, the conditions as they obtain now. That is the only thing you could do under a situation like that. That would involve years of engineering study, taking into consideration all of the underground factors and everything else involved in the field, economics as well as engineering. I will admit that the factors of complex nature that enter into this problem, dealing with this field as a reservoir, are not the same factors that I illustrated in Exhibit No. 36, but I say that regardless of the complication the conclusion drawn there applies to the field as a whole as well as to that particular spot.

In Exhibit No. 36 I have taken two containers, which are connected by pipes, and I don't have any sand in either of the containers, or any other formations that have anything to do with impeding the flow of the gas. The only effect that such a thing would have would be on the time element, but I consider the time element a factor in the usability of gas as a practical matter. It is an economic factor which, in my theories here, have not been taken into account. I contend that it is theoretically true that if you were to [fol. 424] drill one well down here in the eastern Panhandle zone, and that well was operated at 25 per cent of its potential, in the course of some ten or fifteen million years it could exhaust all the gas from this reservoir, and the gas that remained in the reservoir would have exactly the amount of energy as if you had produced the same amount of gas from all the wells in the field.

Questions by Presiding Judge Hutcheson:

I don't say that a certain quantity of gas energy could be gotten out of the reservoir by producing it from a few wells and the same quantity could be gotten out by producing from many wells. There is some sacrifice of energy if you take all of the gas out of the vast territory through having the gas migrate long distances to get out, there is some loss of that energy in the process of getting out. That energy transportation loss occurs in the pressure drop of the gas at the delivery point, wherever that may be, whether it is at the well head or at the end of a pipe line or wherever it is. The energy that it took to transport that gas from some point away back in the reservoir to the well is paid for by the operator in pressure at the well head. He gets it at a lower pressure the further back he has to pull the gas, and if we carry the point to an absurdity, we get the most energy at the surface out by drilling up absolutely every square foot of ground in the Panhandle field. If the pressure as the gas comes out at the surface is not sufficient to deliver that gas that comes out at the surface to the point [fol. 425] where you to use it, you must supplement that energy by the addition of booster stations or add pressure.

The Presiding Judge: That brings me to this question: Suppose the outlet for all the gas was Pittsburgh or some place like that, no matter where we gather it from in the field, suppose we thought it best to have a big booster station down in the center of the field and one well there where we drew the whole gas out at that point, would the same amount of energy be lost in gathering it all from that field in that well as would be lost in taking it out of several wells and then gathering it all together at some place and sending it on to Pittsburgh?

A. No.

Q. That would be a different situation?

A. That would be a different situation.

Q. And it would be in favor of the numerous drilling of wells?

A. That is right.

Question by Mr. Francis:

As to whether, as a practical matter under conditions that were noted, a gas well is not very serviceable to a per-

son who is buying gas for use and transporting it to a light and fuel market where the pressure gets down to 25 pounds, ordinarily 25 pounds is used as the lower limit of extraction. So when I told the Court that there would, under conditions that I gave, be left in the reservoir the same quantity of gas energy, under the two hypotheses [fol. 426] that I assumed the fact is that the usability of that gas from a practical standpoint depends upon, to a great degree, the concentrated pressure in there around the wells, so that the gas can be effectively delivered for use over into a pipe line. To summarize it, the pressure at which the gas comes out at the well head is the function of the distance it had to travel through the formation.

Q. Yes, sir. So as a practical matter again, to get the maximum benefit of the higher pressures that remain in the western Panhandle field instead of letting it be dissipated out and scattered over this whole reservoir and to get down to ultimately this 25 pound pressure where the gas reservoir is no longer serviceable, the practical way to take that gas out is by drilling numerous wells in that area, isn't that correct?

A. By drilling numerous wells in this area or producing gas out of numerous wells that are already in that area, yes.

I mentioned that in the Badger area on Exhibit No. 5, which is immediately east and adjoining the Borger area, the pressures are relatively higher than pressures existing in the Borger area right next to it. I did not say that it is the same formation, but in the Badger pool it is connected to the gas which is connected to the Borger pool. The Borger pool came in about 1925, and there are literally hundreds of wells in that pool with gas being wasted beyond almost the wildest estimates that anybody could make.

[fol. 427] In the Badger field it is a fact that the wells produce from a brown lime or brown dolomite formation, which is relatively higher structurally than are the wells in the Borger field, which produce from a white lime. The brown dolomite is considered to be a continuation of the upper gas horizon which is not present in Borger about 200 feet above the oil. Provided you show me where the water came in, the situation there which I had delineated is not

inconsistent with those which do not adhere to my theory that there could be an active water pressure which would come into that formation from which the Borger wells produce and put water into those wells, and still not affect the wells that produce in the Badger area, because those wells are producing from a higher formation than are the wells in the Borger area. There is an isolated condition there, and I am talking about the field as a whole. Your theory would be correct if you can show me at any place where you have a definite line of water wells come in and back into the Borger field and show the continuation by water tests, but there is no place in the field that I know of where that condition obtains.

It is true that these Borger wells are producing from a formation which is lower structurally than the Badger formation and which is nearer to the water horizon than are the wells in the Badger formation. In that isolated case I see the point you are trying to make that the water from the lower formation is rising to such heights under the Borger wells that it has permeated the wells in the Borger area producing from the deeper formation, but has not yet penetrated to the higher strata from which the Badger [fol. 428] wells are producing, but will eventually when the water situation over there expands if excessive withdrawals are allowed to come in that area. You are picking an area that represents a small fraction of 1 per cent of the field to predicate the whole water situation throughout the Panhandle field.

It is true that with respect to the water which shows up in the different wells in the Panhandle, it can be determined by chemical analysis whether it is true bottom hole water or whether it is water from higher structures that have percolated down. As to whether or not I know it to be a fact that water has shown up in 645 wells in this Panhandle field scattered in all parts of it, I am not familiar with the total at all. As to my information as to how many wells it has shown up in, it is only that there are wells scattered throughout the area.

In the last year and a half I have been in this field on the ground for about four or five days. Before that time I hadn't made any investigation on the ground until 1928, except that I have been in Texas on various jobs at numerous times, and I have followed the field more or less closely

since the time I was associated with it. I have not made any study in the field in the last six or seven years except these last three or four days.

As to how I explained the phenomenon that exists in this field where you plug a well back that has been drilled down into the water formation, this well, after having been plugged back to a point higher than the water producing [fol. 429] formation, continues to make substantial quantities of water,—in drilling these wells particularly with the rotary you load that formation with water, and the same thing is true when you drill into water, that water rises up. If it is in virgin territory, it rises a thousand feet and flows back into the formation, and then when you plug that water off we find the water further up in the formation. That is very easy to explain, and it also brings out the fact that a great deal of this water was possibly drilling water forced into that formation during drilling operations. I know in the early history of that field there were thousands of barrels pumped into some of those wells, and that will undoubtedly account for some of the water that has shown up.

It is undoubtedly true in certain areas that in the spring of 1935, irrespective of this active water drive in the formation below, the methods of operation in the field through plugging back of wells, through leaking casing, through split casing and the like, have brought into these producing formations tremendous quantities of water. That constitutes a problem in and of itself of channeling and coning. About the only way you can fight that is to keep the pressure as low as you can on those wells and hold that water pressure back as much as you can. The only way you can fight that particular situation is, in the future development of that field, to keep the pressures as nearly uniform as possible. It is true that the pressures drop more rapidly with high rates of production from individual wells.

[fol. 430] Question by Presiding Judge Hutcheson:

"High rates of production" is a relative term and it is used in a relative sense, that is, if we produce gas slowly there is going to be more of a chance of equalization of pressure occurring throughout the formation than if it is produced rapidly; the more rapidly we do it, that takes more energy and that causes a greater pressure drop. There is no definite way to get at what is rapid and what

is slow. Arbitrarily it has been defined in a number of studies that a well should not produce at a greater rate than 25 per cent of its open flow capacity. Each well has its own flow rate. If we have a well which has a potential of 4,000,000 cubic feet per day and it is produced at 4,000,000 cubic feet per day, we are going to have a high pressure drop. That is a relatively high rate of productoin of that well. We drill another well which is a hundred million cubic foot well, and we produce it at a million cubic feet a day, it is a very low rate of production. It is an individual well proposition. I would rather not make any general statement as to the yardstick of the basis of measurement to determine whether or not a well is producing at a fast or slow rate.

Redirect examination.

By Mr. Morgan:

I do not think that the production of wells through the area where the record shows the pipe line properties are located, which you say vary from two or three per cent of their potentials up to ten per cent of their potentials, averaged through the year, could possibly have anything [fol. 431] to do with the coning of water into the oil field in Borger. Energy is not a thing that can be reduced in terms of fuel or light. It is a motivating force; it does not change the B. T. U.'s of the gas. If the gas is delivered into the pipe line at the mouth of the well at a low pressure so that it couldn't go to Chicago, where Texoma's line runs, that is a matter that Texoma and not the State of Texas must deal with.

It is a fact that as far as salable or usable gas is concerned, this question of exhaustion of its energy in getting it out of the well is immaterial. If a given quantity of gas is produced at any given pressure, it will have the same number of B. T. U.'s as the same quantity of gas on a different basis. Theoretically, one well would drain the complete field, but in doing so the time element would become of major importance. In other words, we would have to wait so long for it — come out, it probably would not be commercially profitable to do so. Now, to offset that, the ideal situation would be to drill the field completely up on every square foot. That would not be economical either because

of the cost of the wells and the equipment. The economist has to work between those two limits. I did not intend to say that the ultimate recovery of gas would be just the same as far as utilization goes whether that gas comes out through one or through a million wells. If we have one well in that field, theoretically, if we could take eons of time and whatever time is necessary, we could drain all the gas [fol. 432] out of that field down to any pre-determined pressure. Ordinarily, most gas companies figure the gas in the pool down to 25 pounds. If we use that and drill one gas well in that field, if we don't take time into consideration we could produce every bit of gas from that field down to that limit without losing any of the B. T. U. units of energy in it. However, due to the fact that it would not be economical for us to do that, it would probably result in us not waiting to get it out and would result in the abandonment of the well and leaving some B. T. U.'s in there, due to the fact that we couldn't take the time to get it out. Economically we would have to drill more wells to get the gas out. Migration of gas does not involve a using up of thermal units.

Recross-examination.

By Mr. Francis:

The apparent confusion which has arisen between my statement that the long migrations of gas through the reservoir destroyed none of the elements of the gas which were usable at the surface, and that more drilling would result in the recovery of more usable gas, came as a result of the interpolation of economics and fundamental engineering. As a practical matter, if we are taking the gas from this reservoir by a concentration of wells in the center part of the field, when the gas pressure in and around these wells became so low that you might probably abandon those wells, which is what you naturally expect would result, you would lose a large quantity of gas which you would otherwise recover by drilling about over the field generally. [fol. 433] Both illustrations are extreme illustrations.

Questions by District Judge McMillan:

The gas in the Panhandle averages around 1100 B. T. U.'s per cubic foot. It is a very hot gas. What I mean to say

is that, in measuring the gas by the cubic foot, there will not be any less B. T. U.'s by reason of this loss of energy.

Question by Presiding Judge Hutcheson:

I meant to say that when you drill more wells, drill them more thickly, that you get more cubic feet of gas out of the reservoir. We would recover more gas through a closer spacing and economical drilling, but each cubic foot of gas which was produced would have the same number of B. T. U. units in it that would be produced from the reservoir by any other system of drilling.

Redirect examination.

By Mr. Morgan:

Disregarding the time element, there is no difference in the number of cubic feet which would be produced, and when I say that more would be produced by closer drilling, I am talking about a given period of time.

[fol. 433a] STANLEY GILL, witness for plaintiffs.

Direct examination.

By Mr. Morgan:

My name is Stanley Gill. I live in Houston, Texas. I am a consulting engineer, with office in Houston, Texas. I was educated for the profession of engineering at the University of Washington, from which I received a Bachelor of Science degree, and later completed a three-year graduate engineering course at Columbia University, from which I received the degree of Chemical Engineer. In February, 1924, I was employed by the Mellon Institute of Industrial Research, Pittsburgh, Pennsylvania, by which I was assigned to the Gulf Production Company, and sent to Houston. From February 1924 to December 1931 I was engaged in engineering work in the Mid-Continent oil fields for the Gulf Production Company, by which I was directly employed during the latter years of this period. Since December 1931 I have been engaged in independent consulting practice, which practice has comprised all phases of

engineering work, and has involved actual work and study in most of the important oil producing areas of the State of Texas.

I have had occasion to make a study of the issues involving the gas field and gas production in the Panhandle that I have heard reviewed here. My earliest contact with the field was in 1927 and was related almost entirely to oil production. In connection with this case, for the past two or three months I have been studying those conditions. Most of my study has been from records. I spent enough time in the field to validate those records in my opinion. I [fol. 434] have examined a great many well logs in that area. In my opinion, the field is not under an active water drive. This opinion is based upon the facts relative to the field, which make it absolutely conclusive that the pressure in that field is not being maintained by encroachment of water. As to the difference between the term "water head" or "water control" and "water drive" I may illustrate that by analogy in connection with the field itself. We have heard testimony relative to the possible water head from the field and the outcrop in the Wichita Mountains as controlling the initial pressure in the field. If the reservoir were connected to the outcrop in the Wichita Mountains by a little pipe half as big around as a pencil, in the course of thousands or tens of thousands or hundreds [fol. 435] of thousands of years that little pipe would, if fed with water at the top, let through enough water to build in that field a pressure corresponding to the hydrostatic head, 430 pounds. That is hydrostatic head. It is the transmissal of pressure through a fluid column, and that column can be of very, very small size. The pressure at the bottom of a fluid column one mile in depth as big around as the Pacific Ocean is just the same as the fluid pressure at the bottom of a column as big as the lead of this pencil and one mile in depth. Hydrostatic head is surely a pressure phenomenon determined by the weight of a single column of fluid reaching up to the top, and is determined only by depth and not by the shape or size of the container. A hydraulic drive is possible only when the water can move in freely to take the place of the gas or oil as they are removed.

And to go back to my illustration of a pipe half as big as a pencil reaching from that field to the outcrop, it would,

over the many, many years that have been available, give a hydrostatic head which would establish that pressure, but as gas or oil were withdrawn from the reservoir, it would be so small that it would not let in enough water to keep up with the withdrawal of five barrels of oil or a thousand cubic feet of gas a day out of that whole reservoir.

When I say there is no hydraulic drive behind that water, whether it be in the Wichita Mountains or elsewhere, I mean that the water is coming into the reservoir at such a slow rate in overcoming the resistance that, while it got [fol. 436] there over geologic ages, it is not getting there with sufficient speed at this time to exercise a driving force in keeping up the pressure in that field. This is shown by that low pressure area between the water edge and the higher pressure gas areas. No pressure could be transmitted from the water edge through that low pressure oil area to the high pressure gas. Gas just doesn't work that way.

I have made a study of the findings of the Commission to the effect that the withdrawal of gas from only a few or a limited number of the gas wells in that field, and not producing it from a lesser number which are not being produced into the pipelines, would cause a loss of gas energy in the reservoir. As to whether or not, in my opinion, there is a loss of gas energy, reservoir energy, incident to producing the Texoma requirements for its markets from its 90, or approximately 90 wells, rather than connecting with 40 or 50 additional wells and producing its requirements from all of the wells including those 40 or 50 wells, it doesn't make any difference.

Exhibit No. 36, described by Mr. Boatwright, illustrates the elementary principle which applies to any possible system of removal of gas from any series of interconnected containers regardless of their form, size or anything else. Exhibit No. 37 is simply a further step in illustrating this principle. We have at the top of this figure a cross-section of a gas producing formation showing simply a series of interconnected porous formations carrying gas. This is substantially the same cross-section as is depicted in a similar [fol. 437] cross-section submitted by Mr. Peterson in Exhibit No. 15. This system, considering the initial condition of gas in place, would be equivalent to taking all of those at any one point and jamming them together and making just

one porous body. If that were done we would have across the width of this reservoir at any one point the thickness shown by this middle graph, which is labeled "total thickness of gas bearing formation." If we assume that all of that is equally porous and all of it under the same pressure, each foot of thickness would carry as much as a foot of thickness at another point. Again, for illustrative purposes, we can consider this distribution of gas as equivalent to the distribution in a series of interconnected containers. It make no difference in the physical principle whether we consider the millions of interconnected containers which are represented by the actual porosity in the sand, or whether we use a smaller number of containers, so I have illustrated here under the heading "equivalent distribution of gas in containers" a series of six containers interconnected by valves and each with a valve through which gas can be produced, which is the mechanical equivalent of the system which we have in that cross-section. We can take that sort of an illustration and go through any possible sequence of removals of gas. We can take it all from one container; we can take it from all of them at once; we can go through any conceivable sequence and find in every case that after the pressure has equalized, as it will inevitably do in any interconnected porous system, the final gas and [fol. 438] energy status is the same regardless of the sequence of the removals. The principle which controls is that in a system containing gas you cannot remove energy without removing or transporting gas, and you cannot remove gas without removing or transporting energy; the two things are inseparable in considering the gas system.

Exhibits Nos. 38 and 39 simply carry that same principle over to a hypothetical section cut out of a gas reservoir, a section 12 miles in length and one mile in width. The conditions assumed of 10,000,000 cubic feet of recoverable gas per acre are roughly equivalent to the conditions that prevail over parts of the Panhandle reservoir. Exhibit No. 38 illustrates the case of one well located at the end of that 12 mile block, which has produced at a rate of 10,000,000 cubic feet per day for a period of 2500 days. Now, assuming that this well has characteristics corresponding to certain wells in the field on which I have data, wells having potentials of approximately 40,000,000 cubic feet, we are able to arrive at a calculation of the pressure across the field at

the end of that 2500 days, which is illustrated by Map B, a contour pressure map using the same color legends used in the pressure map previously submitted. It shows that in that case on the last day of that 2500 there is a gradation of pressure from a low of something below 140 pounds, I don't recollect the exact value right at the well, to the undisturbed initial pressure of 430 pounds 12 miles away from the well. That is a pressure gradient set-up comparable to that which we now have in the Panhandle field, where heavy withdrawals along the north edge of the oil area have produced a present pressure condition, which is, roughly, equivalent to that which I have shown in case "B" on this [fol. 439] exhibit. If that were shut down at the end of those 2500 days and the pressure were allowed to equalize, which would take a long time, we would arrive at a final equalized condition of uniform pressure of 312 pounds per square inch pressure clear across the section.

Now, by comparison, Exhibit No. 39 illustrates a more or less equalized withdrawal across an identical assumed section of the field, there being in this case 13 wells located one mile apart. I have assumed that they are produced at the same total rate as the one well in this case is, 10,000,000 cubic feet per day total, which is approximately 769,000 cubic feet per day from each of the 13 wells. After 2500 days of continuous production shown by "B", there has been withdrawn just as much gas as is withdrawn in 2500 days in the case illustrated by Exhibit No. 38, but the pressure distribution is radically different. A comparison of "B" in Exhibit No. 39 with "B" in 38 shows that in the case assumed for Exhibit No. 39 a very uniform pressure across the section. Actually there is from each of these wells a series of pressure gradients corresponding exactly in character to this which we saw in the early case, but because of the short distance and the much lower rate of withdrawal per well, where the pressure differential in this case, for instance, Exhibit No. 38, is nearly 300 pounds across the 12 miles of section, in this case, for instance, Exhibit No. 39, there is the maximum difference of the order of one pound. In other words, we have in this case a substantially equalized pressure, and if we shut down at the end of those [fol. 440] 2500 days, the pressure will equalize rapidly since there is very little equalizing to be done. You will arrive at exactly the same terminal condition as illustrated by

"C" as the terminal condition illustrated by "C" in the other exhibit, that is, as far as the final gas and final energy relationships are concerned, the results are identical. Similarly, we could take any kind of a series of illustrations here, we could take in case 1, Exhibit No. 38, and take the conditions shown after the 2500 days. At that point we could drill another well over on the far end of the section and produce for another 2500 days. We could make some similar shift or no shift at all in our other example, which would continue producing these 13 wells; we could carry it through any sequence down to exhaustion and in either case the final results are identical so far as the reservoir is concerned.

Assuming that you took the same quantity of gas out of the one well that you have taken out of the 13 wells, when the gas has gone through the process of restoring the equilibrium there is no difference either as to quantity of gas or as to the quantity of energy left in the reservoir. Momentarily, in the case illustrated in "B" of Exhibit No. 38, that reservoir energy contained at that point is considerably greater than the momentary energy contained in case "B" in the equalized withdrawal example, but in the concentrated withdrawal case, we will set in motion by the withdrawal of the gas from the one well, by establishing these pressure gradients, movements of gas which cannot be checked which will inevitably go to conclusion and which will in the final wash-out result in an equalization identical with that in the other case.

As to why I say that there is momentarily more energy left in the reservoir if you take out of one well a given quan- [fol. 441] tity of gas than if you take it out of 13 wells distributed over the whole area, in case of equalized withdrawal, none of the gas has to move very far underground in order to be produced; therefore, it is produced at the mouth of the wells with a large part of its original energy content. In other words, we get practically all of this mechanical action at the mouth of the well, in addition to getting all of the fuel energy of that 25,000,000,000 cubic feet of gas which we produce. In the case of concentrated withdrawals, some of that gas has to move in this example 12 miles underground to establish that equalization. Therefore, we consume a larger proportion of that mechanical energy in underground movement than we do in the case of

equalized withdrawal, but the difference is made up by the fact that in the case of concentrated withdrawal we get less of that mechanical energy at the mouth of the well. In both cases we get the fuel value of 25 billion cubic feet of gas.

The additional energy that comes out of the ground with the gas produced from the 13 wells, producing them at the same quantity that you would produce from the one well, has no direct fuel value. It just brings it out at somewhat greater pressure at the point of delivery at the mouth of the well. In the practical operation of a pipe line, this gives you a little more energy there to push the gas into the compressor station, unless that pressure is greater than the pressure in your gathering system, in which case you simply dissipate the excess through chokes or regulate it.

Assuming that Texoma has pressure in its wells which is 65 to 80 pounds more than other wells in the Cargray area, [fol. 442] which Texoma might connect with, Texoma will have to knock the pressure of their own wells down to the lowest pressure in the Cargray set-up and dissipate that energy by chokes. It is dissipated.

As to whether or not there is any difference in the ultimate recovery of gas by virtue of producing that gas from the wells connected to Texoma's pipe line or Consolidated Gas Utilities Corporation's than from distributing the production over a large number of gas wells by making connections with wells not now connected to those lines, I don't believe that any of the changes in production from this well (indicating) or that well (indicating) or from any other example from one well to 13 wells, would make the slightest difference in the total amount of gas recovered. If you bring a cubic foot of gas out of a well at 400 pounds pressure, that cubic foot of gas at 400 pounds pressure is a very different volume of gas from a cubic foot container of gas coming out at 200 pounds pressure, isn't it? It is for that reason, that in referring to quantity of gas, when we say a thousand cubic feet, we mean a thousand cubic feet under some standard pressure condition. When we speak of the fuel value of natural gas, we say it has a heating value of a thousand B. T. U.'s per cubic foot and we don't go into detail any further than that, but we mean that it has a heating value of a 1000 B. T. U.'s per cubic foot at some standard pressure and temperature. In all of the discussions that we have had so far and all of the

numbers and estimates of reserves that have been put in [fol. 443] in connection with this case so far, when we say a thousand cubic feet of gas, we mean a thousand cubic feet at a pressure of 16.4 pounds per square inch absolute, and I believe 60 degrees temperature has been used in these calculations.

Assume that we have here a well which has a potential of 10,000,000 cubic feet producing at a pressure of 200 pounds, and well here with a potential of 40,000,000 cubic feet producing at a pressure of 300 pounds. The cubic foot of gas which comes from a well with a 10,000,000 potential and producing at 200 pounds is exactly the same quantity of gas, the same mass of gas that we are talking about when we speak about the production from the other. As to whether or not you can get just as much gas out of a well with a potential of 40,000,000 at 300 pounds pressure as you could get out of a well with a 10,000,000 potential at 200 pounds, you can get just as much mass out, and the only difference is the pressure under which it exists at the mouth of that well. If you are going to produce it to capacity, it would take longer to get a million cubic feet out of one than the other. The only difference in taking it out of the one well or the 13 in your illustration is that you could get it out quicker over here (indicating). Disregarding the time element, you can get just as much gas out of one as you can out of the other if they are all producing from the same reservoir. Take that specific example of 2500 days in exhibit no. 38. The first day happens to be the last day on which that well would produce 10,000,000 cubic feet a day. That specific example had started out [fol. 444] with a potential of 40,000,000 and that decreased; the pressure reduced it to 10,000,000.

The same principles with reference to the waste of gas energy in connection with the production of oil and the consequent loss of oil in the reservoir by reason of a waste of the reservoir energy do not obtain with reference to the production of gas. In the case of an oil reservoir, the energy which moves the oil from its position in the formation into the wells is supplied by the expansion of the gas which is associated with the oil in the formation. It is possible by improper spacing or handling of oil wells to produce in such a manner that that gas which is associated with the oil expands and moves into the hole without

bringing a load of oil with it. The oil is in that way left behind, the removal of the gas having removed from the reservoir the energy which is essential for the production of the oil. By producing the gas without its proper load of oil, we have produced the energy and left the oil behind. The energy will get away with the escape of the gas with the oil still left in the ground. In the case of a gas reservoir, the energy which expels the gas from the reservoir, which moves it from its place in the reservoir to the wells, is supplied by expansion of the gas itself. The gas cannot expand without moving. Since the product which you are producing is the one which holds the energy, your cannot remove energy without removing gas in the case of a gas reservoir.

[fol. 445] Cross-examination by Mr. Cheek:

I attended the hearing of the Railroad Commission in Austin on which this order was predicated. Mr. Morgan was there. I was then retained by Texoma Natural Gas Company in connection with this case. I did not testify at the hearing and Mr. Morgan did not put any witnesses on the stand at the hearing before the Commission.

As to whether my theory about the part that water plays in the Panhandle field is practically the same theory I hold with reference to the East Texas field, there is some difference. I believe that I have always stated that there is some movement of water into the East Texas field. In the case of the Panhandle field, there is undoubtedly some movement of water, but I think it is even less material in the case of the Panhandle field than it is in the case of the East Texas field. The statement which you read from a book I wrote, to the effect: "That the water, as a result of the dissipation of energy in overcoming friction, enters the reservoir under exactly the same pressure as that which existed in the reservoir and hence does not possess additional pressure capable of driving oil from the reservoir," is the statement of my opinion with reference to the East Texas reservoir. As to whether it is true that the preponderance of engineering opinion is opposed to my theory on East Texas, I believe I find myself with the minority in that respect.

I have examined the pressure records of the Texoma's wells and am familiar with them in a general way. I am

[fol. 446] not familiar with the pressures of the wells connected to the Cargray plant. I have studied in some detail the pressure records of the Texoma wells which are closest to the Cargray area. As to whether or not it would embarrass Texoma in the operation of its pipe line to connect to the Cargray wells, if it is a fact, as shown from the evidence, that the pressures on some of the Texoma wells is down as low as 249 pounds, and that the pressures on some of their wells are lower than in all the wells connected with the Cargray plaint, or the majority of them, I don't admit that premise; I don't believe that that assumption is true.

I see this well marked in yellow in Section 46 of Block 4. That is a Texoma well. Its pressure is 249 pounds. The pressure of a Cargray well immediately north of it is 257 pounds. The pressure of the Cargray well immediately northeast of it is 253 pounds, and the pressure in the well northwest of it is 258 pounds, and immediately west of it is 258 pounds. It is true that the Texoma is taking gas from its own wells into its pipe line.

Q. You tell this Court that it would present any mechanical difficulties for the Texoma to take gas into its pipe lines from those wells that I pointed out there when it is taking gas from——

Mr. Morgan: If the Court please, only in the interest of time because I have no objection in going into this, but I didn't bring out that fact or circumstance as a complaint against inconvenience or unreasonableness of making the [fol. 447] connection; I merely illustrated that it wasn't any advantage to the pipe line in having a lot of energy come out with gas at high pressure, because they would have to squeeze it off in order to get down below the low pressure, whether it be a Texoma well or a Cargray well.

The Witness (continuing):

Assuming that the production is within the range of the abilities of both wells, you can produce the same quantity of gas from a low potential well that you can from a high potential well. I have assumed, as shown by my illustration, a 10,000,000 well on one tract and a 50,000,000 well on another one, and you take off 5,000,000 a day from each of those wells, the pressure would drop more rapidly on the

10,000,000 well. This is because the relatively lower potential is an evidence of the lower permeability in that section. The potential is an evidence of the comparative ability of the two formations to deliver gas to the wells. When you have produced a given amount of gas from each of the wells, your pressure would have dropped much more rapidly in the well of lower potential than in the other well. It would correspondingly be getting a much greater feed in from the surrounding area; it would be building up faster. That is because of a greater pressure differential between it and the surrounding portions of the reservoir. Roughly, the difference between the squares of the terminal pressure determines the rate of flow through a given resistance. It is not the difference in pressures, it is the difference in the squares of the pressure.

In explaining, I will illustrate what this means: That is in the Panhandle reservoir where we have a 430 pound [fol. 448] pressure back away out somewhere, the fact that there is a difference in squares means that the rate of delivery picks up more rapidly than the pressure differential with this maintained 430 pounds here (indicating); say we have 100 pounds over on the other side of the field, or, rather say we have 100 pounds differential, 400 pounds on the south side and 300 on the north side. That will establish a certain rate of gas movement, but instead of having 100 pounds we have 200 pounds difference. The rate of flow in that case would be more than twice as fast rather than less than twice as fast.

It is true that when you start to produce gas you cannot go out and build up the pressure in the reservoir. It is a reservoir condition that is beyond your control. When you have 430 pounds out here and 100 differential, we will get a certain rate. Now, then, if we get so that this pressure away off to the south has dropped down to 300 pounds and that pressure to the north is still 100 pounds lower than that pressure, then we still have the same total pressure differential but a lower over-all pressure, we will get a lower rate of gas delivery. If your object is to get the same amount of gas produced per acre, you have got to drop your working pressure at the well or drill another well.

In the Panhandle field today we have a thousand or so gas wells with a total over all potential far in excess of any possible current demand. Now, we have there a prac-

tical case with gas wells distributed from end to end of [fol. 449] the field, and I don't see that we get anywhere with these purely academic discussions of one well. What we actually got there is a drainage pattern already established, by which we could drain the field without any excessive pressure drops and keep up with any reasonable market demand, and in addition there are going to be a lot more wells drilled in that gas area just from lease requirements if nothing else; that is the practical case.

I think 25 pounds as the abandoning point of a well in the Panhandle Field is the figure usually used in calculating the reserves. You are correct in saying that when the well you have drawn on the board has reached 25 pounds of pressure at which the well will be abandoned, there will be a pressure gradient going out from that well at an angle from the bottom of the well. It is true also that, whatever the gradient is, the gas below the point represented by the gradient line leading out from the bottom of the well is unrecovered at the time the 25 pound abandonment point is reached. If at the time the first well started producing you had another well which was completed and producing at the same time and down to the 25 pound limit of abandonment, then it also would have a pressure gradient going out from it similar to the first well which would be represented by lines drawn on the bottom. By the production from the second well which you have drawn you would have recovered gas which is above the intersection of the pressure gradients from the 2 wells, which was unrecovered by the production from the first well, up to that time.

[fol. 450] Q. Now, Mr. Gill, assume that the first well I drew is the well which belongs to the Texoma Natural Gas Company, and the second well I drew is the well which belongs to someone who has no connection for light and fuel, and that under the operation of the waste provisions of House Bill 266, or for some other reason, they can produce no gas from that well. Tell the Court whether or not by the production of gas from well No. 1 belonging to the Texoma Natural Gas Company, you would have recovered as much gas down to the time that their well was abandoned as you would have if this well had been producing all along?

A. I don't know when it was abandoned, Mr. Cheek.

Q. We will assume 25 pounds abandonment.

A. And at what rate of daily production?

Q. I don't care.

A. Well, it makes all the difference in the world; you cannot answer the question without knowing.

Q. There is a pressure gradient at any rate, isn't there?

A. There is a pressure gradient, yes, sir.

Q. And the gas below that pressure gradient line is unrecovered, isn't it?

A. At that time, yes, sir.

Q. All right. Now, whatever the rate when it reaches the 25 pound abandonment point, tell me whether or not more gas would have been recovered if the well which had no connection for light and fuel purposes had been permitted to produce during the same period of time that the Texoma well was producing?

[fol. 451] A. It cannot be answered without a definition of the conditions, Mr. Cheek.

Q. You have answered it once except I didn't use the word "Texoma" a minute ago.

A. There are so many conditions that make a difference; perhaps one-tenth of one per cent less recovery, if you must have it.

Q. You would recover more gas?

A. Maybe one-tenth of one percent. If the wells were ten feet apart, no difference; if they were a hundrd feet apart it might be two thousandths.

Our records do not show that the pressure gradient in the Panhandle is about 50 pounds from section to section. There are cases of that sort. As to whether those pressures stay fairly constant as the well is produced down to the abandonment point, assuming ordinary operations, it depends upon how the whole field is produced. I guess it is true that if the pressure gradient does stay constant, the production from the well will have to decrease as time goes on. There will always be gradients, and for an individual well, if you try to maintain the same rate of daily production, the gradient around that particular well will become steeper as it becomes depleted.

[fol. 452] In Moore County you have wells producing at high rates and a gradient of less than 40 pounds in 15 miles, 3 pounds per mile. It is true that in Section 185 of Block 4, I. & G. N. Survey, a well has a pressure of 242

pounds, while immediately south two sections down is a well which has a pressure of 340 pounds. As to taking the well with 242 pounds on down to 25 pounds and telling what would be the pressure remaining under the section which started with 340 pounds, and making any assumption I want to about the way to produce it, my answer is, we have no basis for assuming gradients at the time of abandonment. Probably at the actual time of abandonment they will be carried down to a much lower rate of daily production, and probably at the actual time of abandonment the theoretical gradient when we calculated the reserve, we assumed an initial gradient of zero, which means that we probably would actually pull that particular well down below 25 pounds. It is true that you wouldn't have any gradient of zero if you abandoned your well at 25 pounds.

Redirect examination.

By Mr. Morgan:

When I speak of 25 pounds as abandonment pressure I am not talking about the pressure of a given well. That is an average pressure for the entire field; it is simply a figure used for a point in estimating the reserves. As to when a given well gets down to 25 pounds and stays around that point, what is going to be the gradient out from that well, as a practical proposition, well, if you are using that well to get enough gas for a kitchen stove the gradient would be [fol. 453] zero for all practical purposes, if you are producing quite a bit of gas from it, it might have a very fair gradient. If you assume a particular well down to 25 pounds and there is a gradient out there running up within a mile to 340 pounds, if you shut that well in it would equalize very rapidly in such a case.

Recross-examination.

By Mr. Cheek:

It would take a long time, a long period of years, for the pressures in the reservoir to equalize. If you shut down all the production from that low pressure area right now, in the beginning you would get very rapid equalization where we have these steep gradients; then as the differ-

ence cut down by filling up in the low pressure area, the equalization would become slower and slower, and I think it would probably take more years to restore a uniform pressure than it has taken to get it into the present condition of very unequal pressure.

If you assume that the oil wells and the sour gas wells kept on producing and the sweet gas wells were abandoned at 25 pounds, the sweet gas wells would never repressure.

[fol. 454] STIPULATION AS TO PRESENT MARKET OUTLET, ETC.

It is stipulated that the present market outlet of Texoma Natural Gas Company is more than 150,000,000 cubic feet daily, measured on a pressure basis of 14.65 pounds per square inch at 60 degrees Fahrenheit, and that the market requirements of the Consolidated Gas Utilities Corporation at the present time is more than 25,000,000 cubic feet of gas daily, measured on the same basis.

Complainants rest.

[fol. 455] DEFENDANTS' CASE

V. E. COTTINGHAM, witness for Defendants-Appellants:

Direct examination.

By Mr. Hill:

My name is V. E. Cottingham. I am director of production and in charge of the Engineering Department of the Railroad Commission of Texas, having occupied that position about two months. My duties are to direct and handle matters pertaining to petroleum engineering and proration matters. I am a petroleum geologist, graduating from the University of Oklahoma in 1920, and since my graduation have been following petroleum geology. I have been with the Railroad Commission continuously since September, 1931, in the Engineering Department.

I have prepared a pressure map showing the various pressures in the Panhandle field; a water map showing the pres-

ence of water in that field. The pressure map is defendants' exhibit No. 40, and exhibit 41 is the acreage map of the field, which shows the main leasehold interests within the productive limits of the field, together with fee ownership, wells, pipe lines, and lease ownerships. The pressure map shows potential and bottomhole pressures on wells. The main pipe line companies running out of the Panhandle field, the direction in which they go and the territories which they serve are in general as follows: Cities Service Gas Company, Kansas City, Missouri; Lone Star Gas Company, Dallas and Fort Worth; Northern Natural Gas Company, Minneapolis, Minnesota; Panhandle Eastern Pipe Line Company, Indianapolis, Indiana; Texas Panhandle Gas Company, Enid, Oklahoma; Texoma Natural Gas Company, Chicago, Illinois; United Gas Company, Midland, Texas; Canadian River Gas Company, Denver, Colorado; and six or eight local companies serving towns in the Panhandle. There are three pipe line companies running out of the eastern part of the field, which run in general to the East and South. Those out of the West Panhandle field run to the West, North and South. The one to the south being Midland, Texas. There is a distinct and marked difference between the East Panhandle and West Panhandle field as far as markets are concerned, [fol. 456] since the pipe line companies do not cross from the East Panhandle to the West Panhandle, or from the West to the East. The acreage in the East Panhandle field is cut up in much smaller fee ownership than is the West.

Mr. Morgan: In the interest of time, if the Court please, we are making no point of the dividing of the field into two zones in this litigation; we are not complaining in the East Panhandle field of the size of the drainage unit and there is no complaint made in connection with the drainage unit in the West Panhandle field on account of any discrepancy between the units in the east and the west and that not being directly involved in the litigation, it seems to be an unnecessary consumption of time.

Mr. Hill: Does that apply also to the sour gas zone that has been marked on this?

Mr. Morgan: No, sir, it does not because we do make an issue because of the higher allotment in the sour gas area as opposed to the lower allotment in the sweet gas.

Resumption of direct examination:

There is a distinct barrier between the East and West Panhandle field so there could occur no drainage between the two zones.

—. Are you in accord with the facts stated, the general history contained in the order of December 10, 1935?
A. I am.

Judge Kennerly: What do you mean "in accord"?

Mr. Hill: Do you agree that those are the facts?
A. I agree that that history set out there is correct.

With reference to the general geological formations of the Panhandle field I would like to introduce a cross section to explain to the Court, which is marked "defendants' exhibit No. 42". Exhibit 43 represents four cross-sections—five cross sections, one occurring in Oklahoma which is not used for this exhibit, but this represents cross section A as represented by this line A to A' through the Bush Helium Dome in Potter County, through this Sunray Dome in Moore County thence northeasterly——

Mr. Francis: As shown on exhibit what?
[fol. 457] A. As shown on Exhibit 42. It will be noted that the surface here at the colors in green here is represented as salt, rock salt, and the yellow color, you see, is red sand; the lavender is anhydrite, and the blues, the dark blues, brown dolomitic section and the light blue is the gray lime; the red is granite rock and the part that has the crosses in there is granite. The Panhandle field is along an uplift which has a granite core. It is an extention of the Wichita Mountains, which outcrops at the surface, and the same granite ridge runs over into Texas and the center part of this field is represented by an up-faulted granite core. Now, the formations in this field may be divided into red beds and the non-reds for all practical purposes; we will ignore the non-red bed section. This Exhibit No. 42 here, in addition to being a water map, shows the structural contours of the field drawn on top of this anhydrite bed, which is referred to in the Panhandle as the big lime. The anhydrite, of course, is not one of the producing formations. The producing formations in the Panhandle field, particularly along this oil belt here, may be divided into

four general horizons, the brown dolomitic section, the white dolomitic section and underlying that the archean white dolomitic section, and below that the granite wash; of course, in certain portions in the weathered part of the granite, gas has migrated. But for all practical purposes we might just ignore those divisions and divide the general horizon of the field into dolomitic lime, and the red the granite wash. You will note here is the Sunray dome (indicating), here is the Four-6 Dome (indicating), here is the Lelia Dome and north of LeFors that is called the LeFors Dome. Those domes represent, and underlying each, are big granitic peaks sticking up into the sediments around which these lime materials were deposited, and after they were deposited there was an uplift arching the beds into the fold that you see here (indicating). Now, the Panhandle field has been zoned at this point here (indicating) into an east field and into a west field for these reasons: Just at this point, as these structural contour lines show, there is a down-faulted block as represented by this section here (indicating); in other words, this part of the section there being on the south side of the fold, that part is down-faulted and it is faulted below the water level which is [fol. 458] occurring here in the fault at approximately zero.

Q. This is cross section C?

A. Yes, this cross section from C to C′ on Exhibit 42 is represented by a cross section C on Exhibit 43. Just at a glance it may be noted the relationships of the different cross sections of the formations by noting the attitude of the beds at this point (indicating) through this part represented by a cross section from A to A′.

Q. Call the exhibit.

A. On exhibit 43, cross section B to B′ on Exhibit 42 represented in cross section B on Exhibit 43, and cross section C to C′ is represented on Exhibit 43 by a cross section on Exhibit 43; D to D′ represents this part in the most —a cross section on Exhibit 42 is shown by the cross-section D on Exhibit 43.

The fact that when the field was first discovered it was found to have a common general reservoir pressure of approximately 430 pounds would indicate that it had a common source for its pressure and that it was connected. The water level in the Panhandle field is found at approximately sea level, which is purely coincidental. The source

of this water in the Wichita Mountains in Oklahoma—the surface of the granite outcrop of the Wichita Mountains is approximately one thousand feet above sea level. The proof that geologists offer establishing that that is the origin of the hydrostatic pressure of the Panhandle field is that in the initial development of the field it was found that water would rise approximately 1000 feet in this reservoir. That is equivalent to 430 pounds pressure or 43 pounds per hundred feet per square inch. Going back to the equivalent of this producing horizon when you encounter your water at zero: In the Wichita Mountains the equivalency that is found just around the periphery of this granitic uplift is approximately a thousand feet, so that would suggest that that is the place for the intake of the water supplying the hydrostatic head to this water bottom.

The Sayre field in Oklahoma has an elevation of 1870 feet above sea level. The oil encountered in that field is encountered about 2960 feet. Subtracting the sea level from the depth would give you a minus 1090 feet, that is, a minus below sea level, and where the outcrop outcrops in [fol. 459] the Wichita Mountains is a plus thousand feet; that will give 2,090 feet, which is, when converted into a column of water, 2090 feet will give about 900 pounds pressure. The virgin pressure of the Sayre field was 910 pounds, so the comparison there is relatively close. Likewise, the virgin pressure of the Bush Dome here was 723 pounds. It has been down-faulted about 700 feet below this structure here (indicating), this big fault coming—the Potter County fault, it has been pushed down about 700 feet which would give it an additional 700 feet of water. An additional column of water 700 feet would amount to 301 pounds of pressure, and 301 pounds of pressure added to the initial reservoir pressure of this field would be 731 pounds, which is a pretty good check. Similarly, the Hugoton field north of this some hundred miles on the other side of this Anadarko Basin you see that there is a large structural basin occurring in this position on the north flank of the structure on this side, and a large basin on this—the basin on the north flank of the structure is called the Anadarko Basin and then the deep basin on the south flank locally is called the Palo Duro Basin, which is a part of the Great Permian Basin. North of Hutchinson County here from about 125 miles in Texas County and those counties

near Hugoton, there is another large gas field. That field is producing from the same stratigraphic horizon as this field. In as much as the contours from this field connect and line up to that area, and in as much as that initial pressure up there was 440 pounds per square inch, that is, the virgin pressure, it is strongly suggestive that the Sayre field, the Bush Dome and all of these are connected to the same water body that is connected with this general Anadarko Basin and Permian Basin on the south flank.

Q. In your opinion as a geologist, and from your experience with the Panhandle field with the Railroad Commission, is it your opinion that there is an active water head in the Panhandle field at this time?

A. I feel reasonably sure there is.

Q. All right. Now, Mr. Cottingham, there has been some testimony here that the water would rise in a well a thousand feet and then later on that that height would come down. Can you explain that to the Court?

[fol. 460] A. Yes, sir, the pressures along at this part, along the north flank of the structure, represented at present by these same 44 different oil pools occurring, the pressures range anywhere from 100 to 250 pounds. From this reservoir there has been a volumetric withdrawal of 252,000,000 barrels of oil. Volumetrically, there has been seventy times as much gas withdrawn from the reservoir as there has been oil. In other words, if the space that both the gas and the oil occupied would be represented, it would represent the volumetric displacement of some 17,000,000,000 barrels of oil, so the volumetric withdrawals from this common reservoir have been enormous. There is no field in the world—East Texas field, for instance, is estimated to have produced some two or three billion barrels of oil and the volumetric displacement from this has already been approximately the equivalent of 17,000,000,000 barrels of oil. So the withdrawals from this area have been much more rapid than the water encroachment could keep pace with. In other words, pressure decline is a direct function of withdrawals and if your withdrawals are more rapid than your water can encroach, you will have corresponding low pressures. Back to your question as to why the water does not rise a thousand feet in the hole at the present time; You can take an area where the pressure has been reduced to 200 pounds, if you have a bottom hole pressure of 200

pounds the only energy you have to push the water up in the hole is that 200 pounds of energy, so that dividing .43 into 200 pounds would give you the height it would rise; if you had a bottom hole pressure of only 43 pounds it would push the water up in the hole only 100 feet; if you had 86 pounds it would push the water up in the hole 200 feet, and that is the reason why—it isn't because the pressures out in the Anadarko Basin here is not encroaching and having that pressure, but it is because the volumetric withdrawals have been so rapid that the water as it encroaches cannot go up into the bore of the well higher than its bottom hole pressure.

Q. By reason of the excessive concentrated withdrawals you have lost that tremendous amount of pressure, is that right?

A. That is right.

The purpose of exhibit 42 is to show the water condition. The Panhandle field, out of the 44 pools along the north [fol. 461] flank and those one or two on the south side, has around 2597 oil wells; 645 of those wells are now showing water in appreciable amounts. On exhibit 42 oil wells showing water in varying amounts are encircled with a small red circle. There are 78 oil wells in the Panhandle field from one end to the other that carry special water exemptions and we have just recently completed a five day potential test of all of those wells and they are shown on this map, the same size of a red circle with a color green inside of the little circle. The big red dots that you see here are gas wells which show varying amounts of water, and on this map you will note there are 31 of those gas wells that show water and this water has been analyzed.

The Presiding Judge: Where are those gas wells that are showing water, in what part of the field?

A. Here is one, two——

Mr. Francis: Call out the counties.

A. In Moore County is one well, here are two wells here in Hutchinson, southwest Hutchinson.

Mr. Hill: That is in the center of the west field?

A. And along the edge about here—here is one, two, three, four other wells, five in eastern Carson County and

along western Gray there is one, two, three, four, five, six, and central Gray is another one and west Gray is another one and in Wheeler County there are one, two, three, four, five wells showing water; those are gas wells that we acquired samples of and we are having analyses made by the Bureau of Chemistry, University of Texas.

The encroachment that water has made into the Panhandle field has been an irregular encroachment. I have a general water survey of all the oil wells in the Panhandle field producing an appreciable amount of water with oil as of October, 1935 (Referring to defendant's exhibit No. 44). This exhibit shows oil wells making water scattered throughout the field. The total for the entire field, 645 oil wells making water, and the amount of that water, 30,426 barrels daily. The amount of oil produced with that 30,426 barrels of water is 12,634 barrels daily. The average water per cent for these 645 wells is 70.7 per cent for the entire field. The term top of the pay used in the exhibit means the top of the horizon in which the first oil was encountered. [fol. 462] Total depth shows the depth the hole was carried. Elevation means sea elevation at the surface of the well, and T. D. datum or the total depth datum shows the height the bottom of the hole was above or below sea level. A plus shows above sea level and a minus below sea level.

Q. All right. Now, how many wells altogether in that list?

A. 645.

Q. All right.

Judge Kennerly: 645 out of how many wells?

A. 2597, I think, is the last count on the last proration schedule.

By Mr. Hill:

Q. About 25 per cent of your oil wells are showing water?

A. Slightly more than 25 per cent.

I have another exhibit on water, which is defendants' exhibit No. 45 and is a survey of 67 oil wells operating on special water exemptions. This shows the percentage of the water increase or decrease as shown by an actual five day gauge made in November, 1935, and it shows that 67 of the wells were compared; 50 of them showed increases in water; 15 showed slight decreases in water and 2 wells showed the same. In addition to that, 6 of these 67 wells

were not making water in 1932, but in 1935 they were making water. If you want those 6 wells which have shown material increases from no water, 3 of those wells were in Carson County, 1 in Gray County, 1 in Hutchinson and 2—no, there were 3 in Hutchinson. Those wells were not making any water and are now showing amounts from 28 to 63 per cent.

During the months of June and July, 1935, just prior to House Bill 266 becoming effective, the general potential test was made of all wells of the Panhandle field along with rock pressure of each well. There was no provision on those test tickets for water, but after we found some of the wells were showing water as we got pretty well along, some of the boys put on "showing water" and some—it wasn't a water survey. It was just a notation on any peculiarity of the well, it wasn't with any idea of making a water survey, but on the basis of that data that was on those tickets there were some 45 or 50 of those wells on which it was indicated that they might be producing water in varying amounts, so in December we went through those tickets and tested these [fol. 463] wells on twenty minute open flow to see if they were making water and have chemical analyses on some fifteen samples of the oil well samples from the oil wells which showed definitely a general chemical composition. With reference to the gas, there are seven of those so far, seven out of fifteen of those samples definitely show that they are of the same chemical composition as the water associated with the oil, but as I told you before we will not have that analysis complete until some time tomorrow. The holidays broke into our work. That exhibit is defendants' exhibit No. 46.

During the short time available for the purpose of making water tests, we open-flowed 50 wells but we improvised a water extractor in order to get a sample of the salt water of those wells that produced or showed a spray of water for twenty minutes during the twenty minute period of open flow; we saved those samples. There were 31 of those, and then some of the wells that have been —with those previous notations that Mr. Hughes, I believe, referred to this morning, some of those didn't show any water; some, of course, did. Out of the 50, of 31 we got samples.

The present water situation in the Panhandle field presents a rather irregular picture so far as the general pic-

ture is concerned, because of the fact that there are a great number of low pressure areas, and if you will consult the map, you will see the places of the most concentrated withdrawals the worse water situation and that is to be expected. So far as the water situation is concerned, its present picture, the damage has been done only along the north side of the structure where there have been concentrated areas of withdrawals. Along the extreme west end of the structure the pressure is practically virgin and there can be no water encroachment where the pressures are high against virgin pressure. The same thing is true along the south flank, but on the east end where there is a small oil field, which is a comparatively new field, yet water in just the last few weeks has started coming into that field and it is making water in appreciable amounts. Along the north flank of the field you have—initially there was an oil-water contact and a gas-oil contact. On the south side of the field, there being practically no possibilities from the present outlook for oil, it is expected that you will have only a gas-water contact and, if in the future there are con- [fol. 464] centrated withdrawals along west and the south flank of the field similarly to what has already occurred in the north side of the field, you will have a very irregular water encroachment which will cause water channelling and coning, resulting in the entrapping of gas and oil.

Q. Now, as a matter of fact, don't we have a problem up here in the north part of the west Panhandle field with reference to the Sun-ray wells and other oil-water wells in that area?

A. That is an area where there has been highly concentrated withdrawals and the water is coned to an alarming extent. If you would like, I can refer you to Exhibit 44.

The Presiding Judge: Is that an oil area?

A. Yes, sir, oil and gas.

The Presiding Judge: That is all in oil wells, isn't it?

A. Sir?

The Presiding Judge: I mean that oil coning is in oil wells, not in gas wells.

A. There are gas wells making water.

The Presiding Judge: I looked over your list of gas wells; it didn't seem like much water in them but in the oil wells you showed a good deal of water.

A. The reason for that, that water is atomized and it comes out just as a spray.

The Presiding Judge: I just wanted to ask you for information where you say this "serious coning," is that in oil wells or in gas wells and if a gas well, how is it operated in a gas well? How does it come there?

A. There are oil-wells with high gas-oil ratios.

The Presiding Judge: That is it?

Direct examination resumed:

I find that where there are heavy concentrated withdrawals throughout the gas area that water intrusion is found.

This is the idea with reference to water: There is no water horizon or oil horizon or gas horizon. You have in the brown dolomite there a porous zone through there, and then you have zones in your white dolomite, porous zones, and they are not easily intercommunicating between vertically but they are communicating laterally along the bedding planes, so a well that is drilled through the brown dolomite might get gas out close to the water's edge and go down and get oil, because it happens to be in that strati- [fol. 465] graphic level just above the water table. So you might get gas in the brown dolomite and underneath in the white dolomite you will get oil, and if it isn't properly cased and taken care of, you have a high gas-oil ratio well. But there are some places where the oil and gas are in close proximity and there isn't hardly any way to separate them from mechanical means, because of their position on structure; they just naturally are going to have a high gas-oil ratio.

Q. In view of the situation disclosed by your preliminary examination or preliminary water survey, if concentrated withdrawals in gas fields continue, what is going to be your water situation in the entire field?

A. In almost direct proportion whether or not the area is produced uniformly or ununiformly or not that pattern will control the water encroachment.

Q. What result will that bring about at the time the field is abandoned as far as the recoverable gas is concerned?

A. It will result in water coning and channelling; any irregular withdrawals will cause water channelling where you have any kind of water drive at all.

Q. I mean what will occur at the time the field is abandoned as far as the gas that might be recovered?

A. It will cut down the ultimate yield of the gas in two ways: "One, you will have water coning and channelling and entrapping off of saturated sections of horizon and, second, you will have water coming into your well bore before the abandonment pressure is reached, cutting the gas off from the avenue of escape through the well bore and leaving large quantities back in the reservoir which will never be recovered."

Q. Now, Mr. Cottingham, in your opinion, will the proration formula adopted by the Commission and promulgated by it tend to minimize this water threat?

A. I think it will.

I had prepared an exhibit showing the effect of the three allocations under the Commission's order to the holdings of the Texoma Natural Gas Company in the west sweet gas field of the Panhandle district. This exhibit is marked "defendants' exhibit No. 47".

It shows a drainage area in one case, according to the [fol. 466] formula that the Railroad Commission adopted, which they call the 50-50 formula, using 640 acres. On that basis, using that formula, the Texoma's allowable would be 136,133 M. C. F. daily. By using the same formula and applying it to the Texoma's holdings on a 2560 acres or four section drainage area basis, using, of course, the 50-50 formula, they would get slightly less daily allowable on that basis than they get using 640 acres.

Q. They get a million cubic feet less?

A. Just about a million cubic feet less.

Q. Than the 136,000,000 cubic feet?

A. That is right.

Judge McMillan: Mr. Morgan, how many million cubic feet a day does your pleading show that the Texoma needs to fulfill its requirements?

Mr. Morgan: More than 150,000,000.

Judge McMillan: Wasn't your estimate on the allowable under this order less than what he said here?

Mr. Morgan: At the time we presented the application for interlocutory injunction we were allowed 40,000,000 cubic feet daily less than our requirements. By increasing the estimated potentials they have increased our allowable to approximately 135,000,000 this month.

Judge McMillan: You are about 15,000,000 short?

Mr. Morgan: We are about 15,000,000 short under the present order.

Judge McMillan: Per day?

Mr. Morgan: Yes, sir. I don't know what the next one would show.

The Witness: I have prepared defendants' exhibit No. 48 with reference to the connections, towns and persons served by the Texoma and Texas Panhandle Gas Companies.

Mr. Hill: Now, in connection with that, if the Court please, we would like to introduce a report from the United States Bureau of Mines, Department of the Interior, showing interstate transportation and exports of natural gas for the year 1934, state of production, states to which gas was transported and the volume for the entire United States.

(The exhibit was then marked "Defendants' Exhibit No. 49.")

[fol. 467] Cross-examination.

By Mr. Morgan:

The cross sections delineated in Exhibit 42 are copies of cross sections shown in the bulletin of Mr. Cartner and Mr. Crum, both of whom are recognized authorities on the Panhandle Field, and not made from actual logs by me. However, I checked with Mr. Cartner's association in his office the logs that went into the making of those cross sections. You cannot definitely state what connection the production of gas by the complainants and other pipe lines who are producing for the light and fuel markets has to do with the appearance of water in the wells set out in Exhibit 46 unless one of the wells happened to be yours and you withdrew—you produced it heavily; you cannot state just who was contributing—it is the condition that is there in the field, the combined erratic withdrawal condition that has contributed to the present irregular water encroachment in the field as a whole. You cannot single out any individual company. In those areas of concentrated withdrawals is the worst water trouble.

I think the Texas Panhandle has been producing down in Wheeler County at an enormous rate—some of the wells as high as 12 per cent at peak months. The average is be-

tween five and six per cent. That is a pretty good rate constantly over a period of years; without a uniform condition of withdrawals that would develop into a water situation. The area along the north end of the eastern zone represents pressures of from one-fifty to two-fifty; you have a very sudden drop off of pressure north of the properties of the Consolidated Gas Utillities Corporation. I am familiar with that condition. The isobaric contours are becoming irregular and that shows that that area has been—if the area were withdrawn uniformly those isobaric contours are straight, and they aren't straight. The low pressure area is over north of the properties of the Consolidated Gas Utilities Corporation and not at the place where those properties are located. As to water showing up in the regions of those properties I don't think I have any well on their properties, that is, any gas well—there might be because as a matter of fact out of over a thousand wells that we tested last summer there was a notation on 50 that there were sprays of vapor and there could be 150 gas wells in the Panhandle field making water and we wouldn't know it. I don't see any gas wells on their properties [fol. 468] making water. The isobaric contours are getting quite irregular. When you take a pressure test of a gas well if there is water there it is going to show up. A pressure test of all the gas wells in the Panhandle was taken during the months of June and July. When we tested the field we went to the schools of petroleum engineering at the University of Texas and Texas A. & M. College and acquired the services of some fifteen young petroleum engineers; we first carried them into the field to give them a little schooling in order that we would get uniformity, but that was the first test they made and we were not making water tests. They were instructed particularly to make a pressure and an open flow test and we at that time were not concerned with water, and the only notations that were made on those tickets were due to our instructions if there was anything that was peculiar about the well to note it in the remarks column and in some 50 wells they noted—just noted a spray, but they didn't know how much because, as you know, if a well don't produce large quantities of water it atomizes and comes out and you see it just as a smoke. I am not prepared to tell the court that they failed to note water in any instance where it did appear. If water in

large quantities is coming out with the gas it would interfere with the test with the kind of instrument that is used to test it. The 31 that were taken from notations on some 50 tickets that were made are the only ones we have definite information on. A gas well a lot of times just has vapor in the casing but that soon blows out, and if it becomes continuous for twenty minute periods it is entirely likely that the water is coming from the reservoir rock instead of being a distillate condensation at the bottom.

The order will operate to help solve the water situation by requiring ratable taking from all of the wells that are up there at the present time to restrict the market outlet as to the uses as defined in House Bill 266. By restricting the market outlet will tend to reduce the reservoir pressure more uniformly and cause the water encroachment to be more uniform instead of irregular by the creation of low pressure areas.

Q. I asked you if you can help to bring down the reservoir pressure uniformly throughout the field by cutting down the takes from the pipe lines wells which have about 130 pounds higher rock pressure and giving the decrease to wells which [fol. 469] have rock pressure of 130 pounds lower than those wells; will that help to bring down your reservoir pressure uniformly throughout the field?

A. You have got to meet the situation as it is presented to you.

The Presiding Judge: He hasn't asked you, Mr. Witness, about all kinds of situations; he just wants to know why would this formula, allowing them to take more per well, be ratable taking and help the situation?

A. Because of the present stripping law.

The Presiding Judge: Oh.

A. There has been a disproportionate haphazard production up there that has caused low pressure areas to develop, causing water to encroach.

The Presiding Judge: You mean that the present condition is better than the old condition?

A. I mean——

The Presiding Judge: Is that what you mean?

A. I mean quite better.

The Presiding Judge: Well, that is all right, but it isn't what he is talking about at all. He is assuming that the

law is going to be enforced as it is written and that under that law you are going to try to work out some kind of a ratable taking and he wants to know why do you call it ratable when you allow low pressure areas to take more per well than you do the high pressure well.

Mr. Francis: We object to that question if that is the assumption that he is making, that the low pressure wells will make more than the high pressure wells.

The Presiding Judge: I thought they were proportionately per well.

Mr. Francis: No, sir, there is no proof in here of that at all.

The Presiding Judge: Then maybe I misunderstood Mr. Morgan's question. I understood that was a fact.

Mr. Morgan: I haven't gotten to that. I will get to it. But the question I am asking now is, he says he wants to bring down the pressure uniformly in the field so that it [fol. 470] will go down uniformly throughout the field instead of going down faster at one place than at another. I have pointed out that the record shows that the wells down through the length of that field which are not connected to pipe lines have a rock pressure average more than 130 pounds lower than the average rock pressure of the pipe line wells. This only has the effect of reducing the production from the pipe line wells, which are of higher pressure, and giving the exact quantity of that reduction over to the wells which have a pressure 130 pounds lower. I am asking him how is that going to help equalize and uniformly bring down the pressure throughout the field.

Mr. Francis: We object to that question because it is based on an assumption that is not supported by the evidence.

The Presiding Judge: I understood that is the evidence.

Mr. Morgan: That is the evidence unqualifiedly.

Mr. Francis: I don't think it is the evidence in any way that is shown that that is the effect that will take place under this order.

The Presiding Judge: That is the evidence of the witnesses who have gone on, that in proportion to the wells and the production the stripping of sour gas is produced at a great deal higher rate than the other gas; that is the evidence; I don't know whether it is true or not.

Mr. Francis: He is pointing his arrow and my objection is to assuming that wells down in this sweet gas area get more than up there (indicating).

The Presiding Judge: Oh, no, it isn't divided on whether it is sweet or sour; it is divided on whether it is all under the same pressure. I don't understand he is dividing between sweet and sour; just on wells. The low pressure areas are producing more per well than the high pressure wells according to evidence that has gone in so far.

Mr. Francis: I just want to object to his assumption that the low pressure wells in the sweet gas area are getting more per well.

The Presiding Judge: He isn't saying anything about sweet gas wells; he just says "wells".

Mr. Morgan: I am not making the assumption that wells in the low pressure area are getting more gas; the point I am trying to make is that the pipe line company wells [fol. 471] have 136 pounds pressure in excess of the sweet gas wells, and to bring that down to this specifically, in excess of the sweet gas wells which are clamoring for connections to pipe lines.

Mr. Hill: We object to that unless he states what fields, if your Honor please, either the east or west.

Mr. Morgan: That is the west; the differential is more in the east. The pressures in the east are lower.

Mr. Hill: You say it is more in the east?

Mr. Morgan: The pressures are lower in the east; the differential is about 25 instead of 130; I stand corrected.

Resumption of cross-examination:

Assuming the record is correct that wells not connected to pipe lines but classified as sweet gas wells have a lower rock pressure by about 130 pounds on an average than do the wells connected to pipe lines it would indicate that there has been a greater withdrawal of gas in the vicinity of wells not connected to pipe lines than in the vicinity of wells connected to pipe lines. My understanding of the law and order is to correct just that thing that you are talking about. It won't cut down the production where the pressure is high and increase the production where the pressure is low. The law requires the Commission to make an open potential test of the wells every six months. If the sweet gas well has a lower rock pressure it will have a re-

sulting lower potential and the higher the rock pressure and the higher the potential it will get more gas. The sour gas area is only about approximately one-third as large in the West Panhandle field as the sweet gas area in the West Panhandle field. Where you have a difference in the pressure you are going to have to get gas, more take out of one than another. The sour gas area already by reason of extremely low pressure in the formation proves that. If the taking is disproportionate the low pressure condition is going to be aggravated by large production in the sour gas area as against the comparatively small production in the sweet gas area, there is a tendency in that direction. The Commission did not cut down the production in the sour gas area to fifteen per cent of the potential under the statute giving it power to do so if necessary to prevent the migration of gas from the sweet gas area to the sour gas [fol. 472] area. It requires some time to put into effect a program in a thing that is as big as that field. I think the nominations in the December schedule in the sour gas field were twenty-five per cent of the potential producing capacity of every well. As applied to sour gas we gave fifty per cent to acreage and fifty per cent to potential. Twenty five per cent is the maximum that any well can produce. I think the January allowable was twenty-five per cent. I assisted in drawing the orders; they passed through my department. I gave the Commission the figures that were written into that order.

Judge McMillan: Mr. Morgan, there is another matter we wanted cleared up; the evidence probably shows it, but we don't remember it. Under this January order now how much short on its requirements is the Consolidated?

Mr. Morgan: The shortage is approximately 14,000,000 a day out of a market of 25,000,000.

By Mr. Morgan:

Q. Now, these thirty-one gas wells that you have listed here as showing water, and I notice that many of them show a spray of water and observations of that kind, most of those wells were drilled as oil wells originally, either as tests for oil or as producers of oil?

A. I think that is correct, some of them were for gas—primarily for gas, however.

Many of them were drilled down into the water in the beginning and plugged back. I don't think that would account for the presence of water in them. A plugged back job is a plug back. There seems to be some pretty high withdrawals from some of those wells. Let's take the Cities Service Pope well in Carson County. This well was drilled as a gas well by the Cities Service Gas Company and completed October 3, 1928, and shows 355 feet of open hole. A light spray began at the end of six minutes and continued during the test. Analysis of the sample of water shows the same chemical composition as the oil field water down north of it. Another well having the same chemical composition of water is Cities Service Mongole. After being open for fifteen minutes this well began making a medium spray of water. The well was drilled as a gas well and has 185 feet of open hole, and the chemical composition of that water was almost identical and similar to these oil field waters north of here, about six miles.

[fol. 473] Q. With rock pressures of 343 and 352 pounds you wouldn't tell this court that there would be coning of water into these wells, would you.

A. That water situation isn't bad yet, just a light spray and a medium spray.

The presence of water in those wells is not accounted for by coning from the bottom, because vertically the strata are impervious, but I would think that it comes laterally up through the porous stratum, following the lines of greatest porosity. It is six miles from these wells to those oil wells making water. There are seven wells all showing water between there and that water. There are other gas wells between those two wells and the water which if tested might show some water; I do not tell the court they do.

Redirect examination.

By Mr. Hill:

There never has been any testimony that I know of entered at those various hearings to the effect that the Commission should exercise the power to restrict the sour gas area production fifteen per cent on account of any intermingling. No request has been made to that effect. We haven't had any testimony that there was intermingling between the sour and sweet gas areas. I think the nomina-

tions in the sour gas area were in excess of twenty five per cent; there is an automatic reduction to twenty-five per cent if the nominations exceed that amount.

C. J. Fowlston, witness for defendants-appellants.

Direct examination.

By Mr. Hill:

My name is C. J. Fowlston. I have been superintendent of production for the Northern Natural Gas Company since 1930. I am an oil and gas production man, and graduated from the University of Notre Dame in chemical engineering in 1922, and have been engaged in the oil and gas business since that time, that is, in the actual operation of the business for the last thirteen years, mostly in the field. Before going with the Northern Natural I worked for the Shell for ten years in their dry gas, casinghead and in the gas lift departments. From 1925, when I first became acquainted with the Panhandle field, to 1930 I spent [fol. 474] perhaps half of my time there; since 1930 I have spent all my time. I live in Amarillo.

The Northern Natural is a large pipe line company serving the northwest and middle west.

Q. Have you any information which you can give to the Court with reference to any of the wells of the Northern Natural that are making water at this time?

A. Yes, sir.

Q. Gas wells?

A. Yes, sir, I have no data with me so I will have to take it from my memory, but we have two wells in the White Deer area, known as our No. 1 McEwen, in Section 1, Block 4, I. & G. N., Carson County, and our No. 1 Frashier, in Section 177, Block 3, Gray County, that were completed about 1930 as dry gas wells; they were completed approximately 150 feet above sea level. The eight inch casing was properly cemented in the holes. These wells were produced as gas wells and showed no water until about the last year. They are now producing a heavy spray of water when the wells are opened and the water will continue to spray as long as the well is open, and the open flow of the well is approximately one-half of what it originally was.

They were completed about 150 feet above sea level. Generally the sea level constitutes the water level in the Panhandle field. There was no bad workmanship in connection with the drilling of these wells that I know of. I am sure there wasn't, and the wells didn't show any water for over four years.

My only accounting for the presence of water in these wells at this time is that the heavy withdrawals of gas in the areas where the wells are located have brought water into the areas. The wells are located north and east of White Deer and north of Kings Mill, north of the Panhandle and Santa Fe Railroad and about three miles east from the Cargray plant. There are some Texoma wells immediately adjacent to that area.

These wells do not appear on the Commission map as gas wells containing water; I don't know that the Commission is officially advised of it. When a well begins to show water and the meter chart shows that the well is wet by a heavy red line we just go out and blow the well, and try to [fol. 475] clear it up; we don't ask anyboody about it; we just go and do it. We make no report to the Commission about it.

The Shell has one particular oil well that is making water that I know about; I have read and watched its history; it is the No. 1 Cockrell, in Section 3, Block B 3, of southern Hutchinson County. This well was brought in about 1928 as a large oil well. It has now produced over a million barrels of oil, and practically continuously since 1928 has produced from five hundred to fifteen hundred barrels of water per day, and it is still doing that. I know of one other well, the Magnolia Tyco well, near Kings Mill in Gray County, a large oil well, drilled in about 1930; I drive along the road and see it every day. It makes from five hundred to a thousand barrels of water. You can see the water running in a two or three inch stream into a pit next to it.

As to any of the wells connected to the Texoma Pipe Line Company that are making water it is just a matter of field information that numerous gas wells are making sprays of water, but I only know as to our own in detail. The Canadian River showed two gas wells near the town of Fritz, in the southeast corner of Hutchinson County, that are making water. Those are covered by the exhibit. That is a region of intermediate pressure in the neighborhood of

325 pounds. These two wells are connected with the Canadian River Pipe Line Company line.

Q. In your opinion, what is the cause of the presence of water in these gas wells in the Panhandle field?

A. Well, I don't know for sure; all I know is that they are making water and they didn't make it before we had the heavy withdrawals in those areas.

Q. Then, in your opinion, there is a distinct relationship between the amount and concentration of withdrawals and the presence of water?

A. The evidence points that way.

Q. Now, in your opinion, is there a hydrostatic head, a hydrostatic drive in the Panhandle field?

[fol. 476] A. I heard the testimony and the fine distinction that is drawn between those two words. All I know is that the Panhandle structure today is producing and has produced for the last number of years an enormous quantity of salt water each day. It must be coming from some place. It is coming out on top of the ground; I know that.

Q. Now, as a practical producer, can you tell this Court whether or not that salt water constitutes a threat in the Panhandle field?

A. It does to us in our gas production because we have lost approximately one-half of the open flow capacity of the wells that are showing water.

Q. In your opinion, will that condition continue, or become worse, if the present conditions continue?

The Presiding Judge: What are the present conditions?

Mr. Hill: That is concentrated withdrawals; in your opinion, will this condition become worse if the withdrawals continue as they are being withdrawn now?

The Presiding Judge: What I mean is, Counsel, are you taking into consideration what the Commission is trying to do, or what the injunctions are doing? You mean if they continue to produce as they did before the act was passed, or what is your question?

Mr. Hill: Well, I will make it more specific. If they continue to take, Mr. Fowlston, as in the case of the Texas Panhandle down in the Eastern Panhandle field where they are taking ten times, or taking from their reservoir ten times as much as the Lone Star, do you think that that character of concentrated withdrawals will cause the intrusion of water?

A. I think that if conditions remain as they now are, with unregulated withdrawals over much of the structure, which is resulting in localized low pressure areas, that the water will get worse.

I am familiar with the order promulgated by the Commission. In my opinion that order will tend to promote a uniform withdrawal. I think the order will cause the gas to be taken more evenly, and that will be conducive to good effect.

[fol. 477] Cross-examination.

By Mr. Morgan:

What I mean, it will cause it to be taken more evenly if today we see the picture of numerous wells operating at twenty-five per cent of the open flow. Regardless of where it is going, it may not be going to stripping plants, there are numerous wells operating at twenty-five per cent of the open flow both of the pipe line companies and the strippers. Other wells are shut in and have been shut in for years; other wells are producing at rates from nothing up to twenty-five per cent. The Canadian River is a pipe line company that is producing wells at twenty-five per cent of their potentials; it has quite a number of wells along their east line that are producing practically that amount of gas, and wells back in the reserve in Moore and Potter County have been shut in for over a year and produced practically no gas. They are producing almost twenty-five per cent. I am not relying on general information on that production, I have looked at the copy of the reports filed at Pampa. I suppose the reason of this character of production is that those wells are located over there immediately adjoining those stripper areas, and they are producing that heavily to protect themselves against that heavy taking. I merely mentioned that disproportionate takings occur and by various people. I think this order will correct that. I don't think that that part of the order that provides for the taking of twenty-five per cent of the potential from all of the sour gas wells will help bring about even withdrawals over the field. I don't think that gas should be taken more heavily from one zone than from the other zone, the order does provide that it can be done. I joined in a report by a committee of engineers who made a report during the

month of August, 1934, concerning the production and structural conditions in the Panhandle field, and concur in the findings of the committee. I did not say there is an active water drive. At the time I concurred in the statement that there is evidence that no water drive is present as a motivating force to aid in the ultimate recovery of either the gas or the oil. I do say that there are large quantities of water being produced.

[fol. 478] J. B. Massa, witness for defendants-appellant.

Direct examination.

By Mr. Cheek:

My name is J. B. Massa. I am a gas engineer by experience, and was formerly employed by the Railroad Commission in the Panhandle field. I am now an independent consulting engineer. I have compiled statistical data showing the conditions that existed in the Panhandle field at the time the first acreage was transferred to the Texoma Natural Gas Company in the West Panhandle field, which is embodied in Defendants' exhibit No. 51, and which is as follows:

Exhibit 51

At the time Texoma Natural Gas Company was organized, August, 1931, the following conditions existed in the panhandle field:

1. Number of Producing Oil wells	1868
2. Number of Sweet gas wells	688
3. Number of Gasoline Plants	37
4. Daily Volume of Gas to Gasoline Plants M. C. F.	1,080,000
5. Number of Carbon Black Plants	25
6. Daily Volume of Gas to Carbon Black Plants M. C. F.	330,336
7. Total Volume of Gas Produced Prior to August 1, 1931, M. C. F.	2,020,016,692
8. Daily Average Rate of Gas Production August 1, 1931, M. C. F.	1,350,000

I have compiled similar information with reference to the situation that existed in the West Panhandle field at the time stripping started—was legalized by the so-called sour gas law about February, 1933, which was the time the first stripping permits were issued, which is embodied in Defendants' exhibit No. 52, and which is as follows:

[fol. 479] EXHIBIT 52

At the time the Stripping of Gas Started in the Panhandle February, 1933, the following conditions existed:

West Field

1. Number of Producing Oil Wells	1850
2. Number of Sweet gas wells (West)	316
3. Withdrawals By Pipe Line Companies to (2-1-1933) M. C. F.	424,887,292
4. Withdrawals by Gasoline Plants to February 1, 1933. M. C. F.	2,088,455,349
5. Withdrawals Miscl. to 2-1-1933 M. C. F.	964,319,249
6. Total Withdrawals to 2-1-1933 M. C. F.	3,477,661,890
7. Number of Sweet Gas Wells with no light and fuel market. (List attached)	56
8. Number of Gasoline Plants	34
9. Daily Volume of Gas to Gasoline Plants Jan. 1933 MCF	708,824

I have compiled as a part of the exhibit just offered, a list of the sweet gas wells in the West Panhandle field, which in January, 1933, had no market or outlet or connection for light and fuel purposes, showing total loss in rock pressure that the lease had suffered during its life and the percentage of loss, and whether any gas had been produced from the well for any purpose, which is embodied in Defendants' exhibit No. 53.

I have prepared a statement of the history of the field from the time that stripping permits were first issued by the Commission down to the end of the period during which stripping of gas was legal, which information is true and correct according to my information, and which is embodied in defendants' exhibit No. 54, which is as follows:

[fol. 480] EXHIBIT 54

During the time stripping was permitted the following conditions existed in the west panhandle field Feb. 1-1933 to Aug. 1-1935:

1. Number of Producing Oil Wells (7-35)	2413
2. Number of Sweet Gas Wells (West) (7-35)	517
3. Number of Gasoline Plants (7-35)	41
4. Daily Volume of Gas to Gasoline Plants July, 1935 M. C. F.	1,847,339
5. Number of Carbon Black Plants	28
6. Daily Volume of Gas to Carbon Black Plants July, 1935 M. C. F.	515,599
7. Number of Sweet Gas Wells, no connection for Light and Fuel	198
8. Total Amount of Gas to Plants 2-1-1933 to Aug. 1, 1935 M. C. F.	1,395,128,978
9. Total Amount of Gas to Air from Plants M. C. F.	709,109,612

Wherever the expression "M. C. F." appears on any of the exhibits it means thousand cubic feet of gas; however some of these tabulations are based on different pressure bases; for example the casinghead gas tabulations are based on approximate 14.4; some of them are on 14.4 and some of them on 13.2; there is a conglomeration of pressure bases used on most of these.

Q. Why is that?

A. It is due to contracts; and the pipe line gas figures are compiled on 16.4.

Q. You have more gas in cubic feet at the lower pressures?

A. Yes, sir.

I have compiled an exhibit showing in terms of thousand cubic feet the daily average gas consumption of gasoline plants, and the disposition of residue gas by months since October, 1931, down to and including October, 1935, which includes all gasoline manufacturing plants that manufacture gas from any type of gas in the Panhandle field, casinghead plants, stripping plants, sour gas and sweet gas, everything except refineries. I have embodied this information in Defendants' exhibit No. 55.

[fol. 481] I have prepared a list of the sweet gas wells in the West Panhandle field which on August 1, 1935, had no market for light and fuel purposes, which information is taken from the records of the Commission on their June and July tests of 1935. It gives the location, lease name, owner and lease name, well, number, rock pressure and to whom the well has previously been connected. It is for the most part to stripping plants. None of the wells listed had a pipe line connection on August 1, 1935, for light and fuel purposes. The situation in the Panhandle with reference to the condition of these wells is practically the same now as it was then; there may have been one or two well connections. There are 198 wells, which are listed by counties, and there are some in each county in the West Panhandle field. I have embodied this information in Defendants' Exhibit No. 56.

I have made a calculation showing the comparison of the percentage of gas allocated to the wells of the Texoma as compared with their percentage of the total sweet gas wells in the West Panhandle field, the total open flow of all sweet gas wells in the West Panhandle field and the total allowable acreage in the West Panhandle field, which is embodied in Defendants' exhibit No. 57, which is as follows:

EXHIBIT 57

Comparison of the Percentage of Allowable Gas Allotted to Texoma, With Texoma's Percentage of Number of Wells, Open Flow, Total Average and Acreage Considered in Making Allocation

West Panhandle Field

		Percentage of total
Texoma's Daily Allowable Gas, Dec. 1935.....	136,133 M. C. F.	22.4%
Total Daily Allowable Gas to West Field.....	608,552 M. C. F.	
Number of Wells Owned by Texoma.....	93	18%
Number of Wells in West Field.....	517	
Open Flow Capacity, Texoma Wells.....	1,556,601 M. C. F.	18.7%
Open Flow Capacity All wells, West Field....	8,324,321 M. C. F.	
Sweet Gas Acreage Owned by Texoma.....	198,000	26%
Sweet Gas Acreage in West Field.....	765,575	
Sweet Gas Acreage Allowed Texoma.....	42,449	25.8%
Sweet Gas Acreage Allowed West Field.....	164,166	

[fol. 482] Mr. Cheek (to plaintiffs' counsel): Can we have a stipulation on how much sour gas you own?

Mr. Morgan: We just own some small tracts we didn't know were sour when we got them, if the Court please; we have no sour gas production at all.

Mr. Cheek: How many acres of sour gas do you own?

Mr. Morgan: Not any appreciable quantity, not enough to speak of.

The Presiding Judge: No wells on it?

Mr. Morgan: No wells on it.

Mr. Clayton: Two wells now producing.

Mr. Cheek: As much as 5,000 acres?

Mr. Morgan: We did have two wells and sold them, but we have no wells now.

The Presiding Judge: But that acreage is not considered in this computation of percentages and so forth?

Mr. Cheek: No, sir; we would like the record to show that they own sour gas lands, however.

Resumption of direct examination.

By Mr. Cheek:

I have made a calculation of the production from certain of the Texoma wells as compared with the gas which was in place at the time the Texoma acquired the wells, the amount of gas produced by the Texoma from their wells and whether the lease has gained or lost gas based on their present rock pressure, from their pressures in July, 1935. The information as the pressures of wells at the time Texoma acquired them was from the deposition of their superintendent of production, Mr. Dickinson. There are thirty-three wells listed. I didn't take all their wells because some of the wells on the list are in sweet—these wells are in the West field only; I omitted all the wells in the East field and all the wells in the West field that had working pressures on them, where I didn't have rock pressures I couldn't compute them, and I omitted the sour gas wells. I took all the wells listed in Mr. Dickinson's deposition and made calculations on their production as compared [fol. 483] with their reserves which were in the sweet gas area as to which I had rock pressures. I couldn't get information on the rest of them. These thirty-three leases are scattered generally throughout the field, being all the five counties of the West field except Potter county. I making my calculations I assumed an original recovery per

acre of 16,000,000 feet per acre, which is a million more than Mr. Peterson testified yesterday. Assuming that at the time when these leases had an original rock pressure of 430 pounds that it had 16,000,000 feet of recoverable gas, my record shows that as compared with the gas which has been produced from the wells of the Texoma, with respect to whether the leases of Texoma have been drained of gas or have drained gas that some of Texoma's leases have been drained and some of them have drained gas to them, and the net result being about—a drainage to the leases of the Texoma of a little over 5,000,000,000 feet. My figures show that of these thirty-three leases listed that they have drained 12,088,432,000 feet, and that they have suffered on certain of the leases a drainage of 6,457,410,000, being a net gain of over five billion feet. Some of these wells are in the vicinity of the much discussed Cargray plant.

Mr. Cheek: Mr. Cottingham has figured up the sour gas acreage owned by the Texoma Natural Gas Company in the sour gas area, and his figures are 11,200 acres, and he will testify to that. I am offering this, too. (The instrument was then marked Defendants' exhibit No. 58). In connection with defendants' exhibit which is numbered 48 we have been furnished with a number of towns and cities furnished by the affiliated companies of the Consolidated Gas Corporation from the Panhandle field. They furnished thirty-six towns in Kansas and Oklahoma and serve 177,000 population and 21,312 connections and meters.

Direct examination of J. B. Massa resumed.

By Mr. Cheek:

The accepted way of figuring the amount of gas in place under a lease where you know the rock pressure is the application of Boyle's law to your decrease in rock pressure—the drop in rock pressure is roughly indicative of the loss or the withdrawals of gas that have taken place; the percentage of the rock pressure remaining is indicative of the gas remaining. Where you know or can estimate the [fol. 484] amount of reserve per acre originally under the lease, and you know its originally rock pressure, by calculating the decline or percentage decline in pressure you can calculate the percentage of the original reserve still remaining. I followed this method in making my calcula-

tions in Exhibit 58. The only county which is not represented by leases in my calculation is Potter County, which is the county which has practically virgin pressure at this time. The number of wells and leases which were available to me for my calculation are I believe sufficiently representative of the holdings of Texoma to be fairly representative of the general condition under its entire holdings through the Panhandle field. Several of these leases and wells on which the calculation is based are stiuated to the north part of the sweet gas field and in and toward areas of lower pressure.

I have prepared a map which shows the location of sweet gas wells which had no connections for light and fuel purposes in January, 1933, which had no connection for light and fuel purposes on August 1, 1935, and indicating by appropriate symbols which of the wells had no connection for light and fuel purposes on either of these dates.

Mr. Cheek: No. 59. We offer this map. (The map was then marked Defendants' Exhibit 59). I might point this out to the court that these unconnected wells are scattered throughout the field from one end to the other, not in one area.

Direct examination of J. B. Massa resumed.

By Mr. Cheek:

I have prepared calculations on the production from wells belonging to the Texas Panhandle showing how much gas has been produced from their leases. These calculations cover amount of gas they were assumed to have started with and how much gas they have under their leases now and the amount of gas produced from their wells in comparison with the amount of gas which was originally under their reserves, and also in comparison with the amount of gas which they now have under their reserves. In calculating the individual wells I used the per acre, yield of 30,000,000 feet per acre, which is extremely liberal, and is in excess of the average per acre yield accepted in the field.

[fol. 485] Q. Now based on the assumed original per acre reserve of 30,000,000 feet, how much gas do you calculate was originally under the allowed acreage of the Texas Panhandle Gas Company leases?

A. Under the allowed acreage?

The Presiding Judge: Excuse me just a moment, what do you mean by "allowed acreage"?

Mr. Cheek: On the basis of 160 acres to a well.

A. There was 36,600,000,000 feet.

By Mr. Cheek:

Q. How much gas has Texas Panhandle Gas Company produced from its 12 wells from those leases.

A. To July 1, 1935, they have produced 43,336,000,000 feet.

I have the rock pressures of the wells on those leases as of July, 1935, which were taken from the test results of the Railroad Commission on their tests in June and July. In 1932, which is about when the Texas Panhandle got its permit to do business in Texas, these leases were well below virgin rock pressure.

Mr. Morgan: These properties belong to the same affiliated owners and have been operated since 1928.

Direct examination of J. B. Massa resumed.

By Mr. Cheek:

In making my calculations on the percentage of drop in pressure on those wells I assume that the wells had virgin pressure, and based on those calculations I estimate that there was 22,899,000,000 feet of gas in place under those leases in July, 1935. Based on the original reserve of the leases and the amount of production which has been produced from the wells there has been 29,586,000,000 cubit feet of gas drained to the leases of the Texas Panhandle during the operation of their wells. My exhibit also contains calculations both the basis of an assumed 20,000,000 feet original reserve and the 30,000,000 feet original reserve of the results of the same calculations on 1397 acres which the evidence of the Texas Panhandle showed they owned in these leases on an average of all leases not on individual's wells. On the basis of 20,000,000 feet per acre my calculations show that it has drained to its leases 32,000,000,000 feet of gas and on a basis of 30,000,000 feet per acre with the same acreage, 1397, it shows 27,000,000,000 feet having been drained to its leases.

[fol. 486] (The exhibit was offered and marked Defendants' Exhibit No. 60).

Mr. Cheek: We offer this map. (The witness identified the same as a photostatic copy of a pipe line map of the United States taken from the Federal Trade Commission's Report No. 72-A.)

(The map was marked "Defendants' Exhibit No. 61.")

Direct examination of J. B. Massa Resumed:

I worked in the Panhandle field for the Commission two years. I have been in the field since 1928 employed by the Commission or as an independent engineer. I established the gas records of the Commission in the Panhandle. The figures which I have given on the actual production of wells in the exhibits I compiled were taken up to a certain period of time from Mr. Gartner's report and from 1931 from the Commission records, and are to my knowledge, true and correct.

Gas is an important agency in the production of oil in the Panhandle field. I think that it is generally conceded by most all engineers that if huge quantities of gas were permitted to be stripped of the gasoline content and popped into the air that there would be an enormous loss of otherwise recoverable oil because the gas would not be there to assist as a lifting agency. I don't know that the estimates as to loss on account of that condition ran as high as one billion barrels of recoverable oil, but it ran into an enormous figure, several hundred million barrels. I am generally familiar with the manner in which stripping operations have been carried on in the Panhandle field in the last two or three years. The Henderson Company and Cargray Company, two plants that have stripped gas, do not own any wells in the field. The gas from which they strip the gasoline content is produced by other people or companies than themselves, and the gas after production is then sold to the stripping companies at the well. The producers who have sold their gas to these stripping companies produce their gas in exactly the same way that the pipe line companies produce their gas. Aside from the incidental gas which is sold and used locally in the field, nobody in the Panhandle buys gas for light and fuel purposes except the pipe line companies. Sweet gas from dry gas wells is not in demand in that field for gas lift purposes to use in oil [fol. 487] wells. There is no appreciable market at all for

sweet gas from dry gas wells outside of the pipe line market; there is no market in the field for it for chemical manufacture. I do not think it is practical, feasible or mechanically possible for people to extract the gasoline content of their gas and return it to the horizon from which it was produced.

Cross-examination.

By Mr. Morgan:

With reference to the Cargray and Henderson not processing their own gas, it is under a different corporate set-up. I am of the opinion with reference to the Henderson Company's operations that it buys from related companies which are separate corporate set-ups. The Cargray Company is officered by the firm of Hagy, Harrington & Marsh, and practically one of the wells connected to that plant belong to those gentlemen. The Shamrock is one of the big strippers up there; it owns part of the wells connected to its plant and its affiliated companies own part of them. The Phillips Petroleum Company to some extent owns its own production and its own plants; however, I think Phillips buys as much or more gas than it produces itself. Skelly is more so; it buys much more than it produces; they all buy and all produce some of their own. They buy in the immediate vicinity of the plant. They are concentrated right around the plant like the portrayal of the Cargray situation unless there be some exception in the case of Phillips Petroleum Company. I believe for the most part Smith Brothers own their own production.

On the pipe line map of the Federal Trade Commission I do not see any gas line protruding into the State of Wisconsin, where Milwaukee, Duluth, Racine and numerous other large centers of population in that State, and there is no pipe line leading into the State of Michigan and only one pipe line leading into the City of St. Louis.

In computing the volume of gas originally under the Texoma's leases I used the figure of 16,000,000 per acre, and under the Consolidated producing properties 30,000,000 per acre. I am familiar with the location on the struc- [fol. 488] ture of the properties of the Texoma. I based the figures in the Texoma exhibit of 16,000,000 on Mr. Peterson's 15,000,000, which is his estimate of the original aver-

age gas saturation of that entire gas field. It is 350 to 400 miles around the West Panhandle field and the producing horizon thins out until it virtually plays out altogether at the edge, and around this immense area that is a thinly saturated area which was figured into Mr. Peterson's average. To get the average of 15,000,000, you have to assume a great deal more than 16,000,000 through the high portions of the formation, but there are also light spots in the center of the field. The heavy production which brings up that average must be somewhere within the circle or location of those thinly saturated areas which are in the outside. The Texoma has some very heavily producing properties and they have some very light ones. The properties which I have listed are for the most part in that heavy area. They are very good producing properties. Assuming the figures at 20,000,000 instead of 16,000,000 it would show approximately a balance. The higher you go, of course, the more it would go into reverse. I have not figured it out to see whether that is the case. It balanced off at 20,000,000. An estimate of 30,000,000 would show more gas in place, but I take the withdrawals into account. I took it on the basis of allowable acreage and not the actual acreage under the lease that was held by the well. Some of those leases have 2,000 acres in the 39 when I only gave them 640, but in all cases that acreage is not contiguous to the location of the well. Some of them are in the same vicinity and contiguous to the leases. The figure drawn by Mr. Gill and introduced in evidence portrays the situation that actually exists up there in a general way, and the Texoma properties are for the most part located in the area where the producing formations are thickest. There are some wells in the list of wells in the West Panhandle field not connected to pipe lines belonging to the Northern Natural and the Interstate Natural, which is an affiliated company, the producing company of the Northern Natural. I tried to put on that list all of the wells that would be without a light and fuel market. The owners of those wells have pipe lines running to [fol. 489] Missouri, Minneapolis and St. Paul, and part of those wells have since been connected. I have 23 wells of the Phillips Petroleum Company listed. The Phillips Petroleum Company is a buyer of sweet gas and has nominated 30 or 40 million a day. It doesn't have a light and fuel market except for that used in the West field, and they

nominated 30 or 40 million a day for that purpose. Other than the market for field use and plant use there is no other market up there besides the pipe line markets for light and fuel. I understand that the Cargray is now processing gas for the Northern Natural.

Redirect examination.

By Mr. Cheek:

The extraction plants owned by several of the large pipe line companies, in which they extract the gasoline content from the natural gas produced in the Panhandle, are located outside of Texas. In the middle of the gas producing structure the solid granite juts up into those formations and reduces their size and in some places cuts them off entirely, which naturally affects the productivity of the gas producing acreage, which is in juxtaposition to the solid granite, but either cuts down your porosity or cuts down the thickness of the pay, which cuts down the original gas in the reservoir. The Texoma has some leases that are affected by this condition. They are bound to have with the spread over the field that they have.

J. H. Dunn, witness for defendants-appellants.

Direct examination.

By Mr. Small:

My name is J. H. Dunn. I live in Dallas, Texas, and am employed by the Lone Star Gas Company. I have been with that company since January, 1926. My position is that of Chief Production Engineer and I have worked in that capacity for about eight years. The Lone Star Gas Company operates in the State of Texas and Oklahoma, and has a source of supply in the eastern portion of the Panhandle field in Wheeler County. I am a graduate of a school of engineering, and have had experience in the Panhandle in connection with the operation of all the wells connected to the lines of Lone Star Gas Company, numbering at this time 143 wells and dating back to the year 1927, when our operations started up there.

[fol. 490] The Northern Texas Utilities Company and the Consolidated Gas Utilities Company are pipe lines running from the eastern section of the Panhandle field in Wheeler County. The average take by the three lines would be approximately the same. There are about 35 wells serving the line of Northern Texas Utilities, and there are 12 wells serving the lines of Consolidated Gas Utilities Company. I have had occasion to examine the conditions that exist in Wheeler County with reference to low pressure areas in that county, and I have prepared a pressure map of Wheeler County. The center of pressure in that County grades downward to the north; there are three areas in that County of concentrated withdrawal that have contributed toward this general decline. I have a map showing these withdrawals which is before you.

(The map was then marked Defendants' Exhibit No. 62.)

I have outlined three areas of concentrated withdrawals in the Panhandle field on another map than the pressure decline map which has been marked Exhibit No. 62.

(The second map was then marked Defendants' Exhibit No. 63.)

On Exhibit No. 63 I have outlined three areas in the County which have shown the greatest concentration of withdrawals of gas up to the present time. Area No. One is located in block 23 of H. & G. N. Railroad Company survey and is outlined in this map. Area No. Two is located in the northeastern portion of the County and is outlined in this map. And Area No. Three is located in the northwestern portion of the county and the outline is shown.

In Area No. One the American Natural Gasoline Company's stripping plant is located. In Area No. Two there are some gasoline plants, the plant of the Magnolia Petroleum Company, the Airolene Company and the National Plant, which has previously operated mostly on casinghead gas, but I think has stripped some gas. In Area No. Three the Smith Brothers' plant, which is strictly a stripping plant.

The Consolidated Gas Utilities Company complainant's pipe line is located in Area No. Two.

[fol. 491] The map numbered 62 is primarily a pressure map on which I have drawn the pressure contours as shown

by these black lines, and also on this map I have shown in color the concentration of the withdrawals. The symbol at the top indicates that in a section marked in that manner with a small pink triangle in the corner, it has delivered or has produced below 5,000,000 cubic feet per acre as of this date. The next symbol, which is a larger pink triangle in a section such as we have here and here (indicating) denotes a production of 5 to 10 million cubic feet per acre. The next symbol, which is illustrated with a solid purple color with a blank space in the middle, denotes the production of from 15,000,000 cubic feet per acre up, such as these sections here (indicating), those sections which are colored in yellow have as yet no production and the sections which are blank I have no record of production, although there has been some drilling in those sections.

In concentrated Area No. Two there are three sections of land that are completely colored. The Consolidated Gas Utilities Company is taking gas from four wells in one of those sections, which section is 21 in block 24. The Lone Star Gas Company has a connection on one well in that section. In section No. 9, Block A-8, another section in concentrated Area No. Two, the Consolidated Gas Utilities Company has some two or three wells connected and there are some wells connected to gasoline plants in this section. In section 4, block 27, the other section of concentrated Area No. Two, we have only the wells of the Consolidated Gas Utilities Company. There is one section in between those three sections on which I have no record of any production, and another section between them with less than 5,000,000 cubic feet per acre of take; while the three sections have over 15,000,000 take. Immediately east of one of Consolidated Gas Utilities Company's sections is a section that has no production whatsoever.

I have prepared figures to show the amount of take and number of acres in concentrated area No. One. Three concerns take from this area: American Gasoline Company; Lone Star Gas Company; and Northern Texas Utilities Company. American Gasoline Company is connected to nine wells on 1150 producing acres, and through the month of July, 1935, they had taken 39 billion plus cubic feet total. The Lone Star Gas Company is connected to 25 wells in that area located on 2880 producing acres and has taken from that territory ten and a half billion cubic feet. The

Northern Texas Utilities Company has eight wells on 560 [fol. 492] producing acres and have taken ten billion four hundred million from that 560 acres.

In concentrated Area No. Two the Consolidated Gas Utilities Company has 12 wells connected on 1220 acres as shown by the schedule of the Railroad Commission and has taken approximately forty-five billion cubic feet. The Airolene Gasoline Company has six wells located on 520 acres and have taken approximately four and a half billion cubic feet. The Magnolia Petroleum Company has eight wells located on 560 acres, and have taken seventeen and a half billion cubic feet. The National Supply Company has 23 wells located on 920 acres and have taken some more than 35,000,000,000 cubic feet. The Lone Star Gas Company has 18 wells located on 1640 acres from which they have taken 7,800,000,000 cubic feet. The Northern Texas Utilities Company has four wells located on 360 acres from which they have taken 14,300,000,000. There are one or two local gas companies that have taken some gas in addition to that. The comparison there between the Lone Star and the Northern Texas Utilities, the Lone Star has 1640 acres with a 7,800,000,000 take, and the Northern Texas Utilities has 360 acres with 14,325,000,000 take.

Concentrated Area No. Three, the Phillips Petroleum Company has five wells located on 500 acres from which they have taken approximately 6,000,000,000 cubic feet of gas. Smith Brothers have 13 wells located on 1400 acres from which they have taken 45,000,000,000 plus. The Coltexo Corporation has two wells on 240 acres from which they have taken nearly 11,000,000,000 cubic feet, and those are the only companies taking gas from that area.

There are 258 wells in Wheeler County outside of those areas. The production has been in accordance with the following: The Airolene Company has four wells on 200 acres, from which they have taken 8,300,000,000 plus. The American Gasoline Company has nine wells on 1240 acres from which they have taken twenty-one billion plus. The Coltexo has three wells on 400 acres from which they have taken nearly four billion. The National Supply Company has 20 wells on 1160 acres from which they have taken ten billion. The Phillips has 78 wells on 2680 acres from which they have taken five billion, six hundred million. Smith Brothers have 17 wells on 360 acres from which

they have taken five billion plus. The Northern Texas Utilities Company has 19 wells on 1459 acres from which they have taken thirty-one billion. The Lone Star Gas Company has 101 wells on 8572 acres from which they have taken twenty-nine billion. The 258 wells total are [fol. 493] located on 16,961 acres, being all of the producing acres outside of the three concentrated areas.

In the three areas of concentrated withdrawals we have a total of approximately twelve thousand acres. In the East field we have a total of from 23 to 24 thousand developed acres, so the three concentrated areas would have approximately one-third of the developed acres in that county. The three concentrated areas have taken 68% of the total production in the county up to July, 1935.

I have made a study of Wheeler County and the Panhandle field to determine what effect the resistance of the substances in the reservoir has upon the ultimate recovery of gas from that field. This study was as to whether it will ever be possible to have a complete recovery of gas from that reservoir, but I did not carry my figures to the possible percentage, only for illustration. In other words, it doesn't apply to the whole field. I have drawn some illustrations to show or indicate that.

In any gas reservoir the resistance to the flow of gas offered by the sand or formation containing the gas prevents 100 per cent recovery. I think we are all in agreement on that, particularly as illustrated by earlier witnesses who have testified that they thought the abandonment pressure would be 25 pounds. I do not disagree with them. Twenty-five pounds in their estimate indicates that they believe that the sand resistance will prevent them from recovering all of the gas. In the absence of this resistance you could produce all of the gas out of the reservoir in the same manner that you would drain a balloon with on puncture. The resistance in the reservoir, it may be said, is the combined effect of such factors as the size of the pore spaces and the shape of the sand grains or particles around which the gas must travel and as well the distance of travel through the reservoir. Gas flows through the reservoir or formation only when there is an expansion of the gas from a higher to a lower pressure, the rate of flow being the function of the distance of travel, the frictional resistance in the sand and the energy available from the expansion of the gas. The rate of flow will increase

as the distance of travel decreases, or vice versa. We refer to the ease with which gas flows through the formation [fol. 494] as the permeability of the formation. If the permeability is high, there is less resistance; if the permeability is low, there is a greater resistance. The expansion of the gas supplies the propellant or the motivating force to move the gas in the reservoir against this resistance. The way we make that energy available is to lower the working pressure at the well under operating conditions or during production to some pressure lower than the pressure in the reservoir and, of course, it follows that as the reservoir pressure declines and the field becomes depleted that there is less energy available from expansion in order to move the gas. It may be said that the flow of gas through a reservoir is caused by the physical characteristics of the gas which causes it to seek a common pressure level, or equalization through expansion, which is retarded by the frictional resistance of the sand. When we speak of the rate of flow, we inject the time factor which must have serious consideration when determining its effect upon the ultimate recovery of gas. It is the rate of flow, involving the time, which determines the abandonment point of a well and eventually the entire field. It goes without saying that when the rate of flow declines to the point where the continued operation of a well is not justified then that well is abandoned.

I have drawn some figures to illustrate the point that I have been discussing, which are in miniature in an exhibit which I have prepared.

That will be Exhbit No. 64. Exhibit No. 64 will include figures 1, 2, 3, and 4.

Figures 1, 2, 3, and 4 are drawn to illustrate the fundamental law of pressure gradients that will result in the reservoir under certain conditions. Figure No. 1 illustrates a model field which has four wells drilled in the center. We assume that those four wells will be all the wells that will be drilled in that area. Then we may expect to produce gas from those four wells located in the center of the field, which will cause the lowest pressure point during the production and at the abandonment of the well to be in the center. As we operate those four wells down through the life of the field we establish and maintain a pressure gradient as is illustrated in Figure No. 1. Now, if we move

over to figure No. 2, I have shown the same number of [fol. 495] wells located in the corner rather than in the center.

Q. Before you move to figure No. 2, tell the Court what the black figure is immediately connected with figure No. 1.

A. The cross-hatched areas are drawn to represent the pressure gradient away from the wells or the areas of production. You will notice that these cross-hatched areas become progressively greater in proportion to the distance from the well.

Q. Now, does that represent unproduced gas at the time the four wells in the center of the figure would be abandoned?

A. That represents the pressure which will be in the reservoir at the abandonment and the pressure represents gas.

Q. Yes, Now, figure No. 2:

A. Figure No. 2 is drawn to show the difference between concentrated withdrawal in the center of the reservoir and concentrated withdrawal in the corner of a reservoir, the only difference being that the gas has a greater distance to travel in an illustration such as figure No. 2 than it has in figure No. 1. You will notice that the pressure gradient becomes greater in figure No. 2 than it does in figure No. 1.

Q. Then, Mr. Dunn, according to that it seems with the wells located in the corner of the field the pressure gradient would be higher and the amount of gas remaining unrecovered at the time the four wells in the corner of the field would be abandoned would be a great deal more, is that correct?

A. Yes, that is true. Now, passing to figure No. 3, this illustration shows graphically the advantage of uniform well spacing. I have taken the same number of wells and spaced them uniformly over the reservoir. We find then that at the abandonment of the field we would be able to pull the pressure down to the abandonment pressure at four different points rather than in concentrated areas. We will then reduce the pressure gradient or the average abandonment pressure of the field and by doing it we will recover more gas.

[fol. 496] Q. With the wells spaced in the four places located on figure No. 3, would there be an appreciable and substantial amount more production from that field than on either of the two figures that have been illustrated?

A. There would be an appreciable percentage, yes, sir.

Q. I wish you would explain figure No. 4 as shown in these charts.

A. Figure No. 4 is drawn to illustrate the effect on the ultimate recovery of gas from a field when one or more wells are produced to the exclusion of others. In this illustration here I have located two wells for a hypothetical case, each on a section of the field as shown. Now, then, if we produced the well on the left and keep the well on the right closed in during the life of the field, we may expect at the abandonment to have a pressure gradient or pressure increase away from the well similar to this as shown, the top line. The greatest amount of gas or the greatest pressure will be again at the greatest distance away from the well in the reservoir. On the other hand, if we produced both of these wells down to the same abandonment point we will be able to pull the pressure in the reservoir at this point (indicating) down to the point that we were able to pull it by the operation of the first well and in so doing we will reduce the ultimate abandonment pressure of the reservoir in accordance with this illustration. The cross-hatched area here shows graphically a difference in the reservoir abandonment pressure.

Q. Now, I will ask you if, by the operation of one well and the operation of the two wells, the difference in the amount of gas that will be recovered from those two wells would be represented by the black cross-hatch sketched there on your figure?

A. In so far as that difference in pressure represents gas, yes, sir, which it does.

Q. Now, Mr. Dunn, you have seen the various maps that have been placed before you here showing the different degrees in pressure that now exists throughout the field. Is there any reason to say that with a continuation of production of the existing wells to the abandonment point that the same differences only at lower schedules would exist at the time the present wells are abandoned in the field?

[fol. 497] A. I don't know that I have gotten your question exactly right, but if you mean that if production is continued in the future from the wells now located in the field in a similar manner in which it has taken place in the past,

why, then we may expect similar pressure gradients to exist in the future as exists now.

Q. After those wells have been exhausted?

A. After the existing wells have been exhausted or at the abandonment of the existing wells.

Q. At the abandonment pressure. Now, I will ask you to go to the next figure that you care to di-cuss that is up here on the board. It will be marked No. 65.

Mr. Small: I wish you would explain to the Court Exhibit No. 65. It is figure No. 6 in the book.

A. I have prepared a series of similar drawings or plottings of pressure profiles that exist in the field at the present time. The first of those, figure No. 6 on exhibit No. 65, shows the pressure profile that exists in the field and I will point that out on the map, Exhibit No. 63. The profile as shown on Exhibit 65 extends northward from Section 54, Block 23, following this line up to section 22 at Block 24, a distance of 9½ miles. Now, these pressures have been plotted on a horizontal plane showing that the difference in pressure in the nine and a half miles at this time is from 329 pounds down to 265 pounds, a difference of about 65 pounds.

Q. Do you have an area plotted east and west in the field at this time?

A. I have an area plotted east and west which shows the pressure difference in the field in regard to this east-west line as shown on Exhibit No. 63, a distance of fifteen and a half miles. We show the variation in the pressure across the reservoir from 316 pounds up to 422 pounds or 106 pounds in fifteen miles.

Q. Do you have any different pressure plats in any portion of the field?

A. Yes, sir, I have three pressure plats in Carson County, one in Hutchinson County, one in Potter, one in Moore and one in Gray County.

[fol. 498] Q. The one in Wheeler County, that is the east and west plat that you have just mentioned, we wish to introduce, Mr. Reporter, and will be No. 66.

(The instrument was then marked "Defendant's Exhibit No. 66".)

By Mr. Small:

Q. Now, what does figure No. 8 represent?

A. Figure No. 8 represents the pressure profile in Moore County, a distance of four and a half miles between four wells.

Q. And it will be marked Exhibit 67.

(The instrument was then marked "Defendants' Exhibit No. 67".)

Q. I wish you would tell the Court what those exhibits show, briefly.

A. Figure No. 7—I don't have the other county maps here, but I have plotted the sections in which wells are located in Gray County and taken for illustration the pressure difference between wells; we have a slope or pressure gradient at the rate of 99 pounds per mile between the first two wells which shows a very tight formation and low permeability; the pressure drops from approximately 400 pounds to 230 and up to 275 and on down to 185. And figure No. 8 shows a similar section in Moore County.

Q. What does figure No. 9 show, which will be Exhibit 68?

(The instrument was then marked "Defendants' Exhibit No. 68.")

A. Figure No. 9, Exhibit No. 68, shows a similar pressure profile drawn between wells in Carson County taken as an illustration over a distance of eight and a half miles.

Q. Figure No. 12, what does that represent?

A. Figure No. 12 represents a pressure profile in Hutchinson County taken as an illustration.

Mr. Small: I marked figure No. 12 Exhibit No. 69, Mr. Reporter.

(The instrument was then marked "Defendants' Exhibit No. 69.")

Q. Now, Mr. Dunn, have you made calculations of existing pressures in Wheeler County to show how much in cubic feet will be left under the ground at the time the present producing wells are exhausted if existing production conditions continue to exhaustion?

Judge Kennerly: All this is with respect to gas, is it not?
[fol. 499] Mr. Small: Yes, sir.

The Presiding Judge: Excuse me just a moment. What do you mean "existing production conditions"?

A. By concentrated withdrawals.

The Presiding Judge: I mean as proposed in the order. Of course, they will be concentrated after the order just like they were before, but they won't be quite as much concentrated. What comparison are you making? Between the unrestricted production——

A. Yes, sir.

The Presiding Judge (continuing): —and the production the Commission talks about or the restricted production in the developed areas which will result anyway and the condition if the whole field should be developed? What are you basing your comparison on?

A. I am speaking of unrestricted production.

The Presiding Judge: As opposed to the production which the Commission proposes, or as opposed to some ideal production?

A. As opposed to any improvement that might be brought about.

The Presiding Judge: Any improvement. All right.

By Mr. Small:

Q. Proceed with that illustration to show graphically how much gas that you would calculate would be left in the reservoir under the conditions you mention.

A. For illustration I have taken pressure conditions which have been found to exist in Sections 28, 13 and 8 in Block 24, those three sections. There are two wells located in the northern portion of Section 28 and no wells located on the two sections immediately south. I have made a calculation to determine the quantity of gas that would be left in the reservoir at the abandonment of those wells in excess—the quantity of gas that would be left in the reservoir in these two sections in excess of the quantity of gas that would be left in the reservoir in the section that has the wells. Assume that we deplete—that illustration is graphically shown on figure No. 16 in the report. Assume that we operate the two wells in Section 28 down to abandonment, whatever that pressure may be. Then, with the pressure gradient that exists in the reservoir due to

the frictional resistance that we find there, we will find that the average pressure at the abandonment of the wells in section they are located in will be 13 pounds, the average [fol. 500] pressure in the next section will be 39 and the average pressure in Section 8 will be 52 pounds. With an estimate of sixteen and a half million cubic feet per acre as the original content of this reservoir, on the basis of the pressure gradients which I have shown, we would leave approximately 600,000,000 cubic feet more gas in the ground at the abandonment of the wells in Section 13 than we would leave in Section 28, and correspondingly we would leave approximately 900,000,000 cubic feet more gas in the ground under Section 8 than we would leave under 28.

Q. Now, you mean by that that if there happened to be a well on Section No. 13 and Section No. 8 that was not permitted to produce and a well on Section No. 28 that was produced to exhaustion, that would be the difference?

A. There would be no difference in the results of my calculations if we had a well or wells located on these present undeveloped sections but did not produce them.

The Presiding Judge: The point is it isn't a question of wells; if land has got no production, it won't produce. I mean it is not a matter—you were speaking of wells. The same things applied to land without wells as to land with wells on it if the well is not producing.

Mr. Small: Certainly. The point he is making, your Honor, is that by producing all of the wells in the field a greater recovery would be had than by producing only the pipe line wells.

The Presiding Judge: And if the field was thoroughly drilled up, it would produce more than if it were only partially drilled?

A. Certainly.

The Presiding Judge: I think everybody understands that.

Mr. Small: Certainly. Now, then, Mr. Dunn, tell the Court whether or not there would be a substantial amount more of gas recovered from the field in the Panhandle by the production of all of the wells up there or by just the production of a substantial number of them owned by the pipe lines?

A. It is my opinion, based on these calculations in this study, that there would be a very substantial quantity of gas more recovered by the operation and production of gas—the operation of all the wells and production of gas therefrom.

[fol. 501] Q. Now, is that the basis upon which the Lone Star has conducted its operations in Wheeler County?

A. The Lone Star Gas Company's policy has been to purchase gas as well as produce gas—and, in my opinion, a greater recovery of gas from the reservoir by reason of that policy; if that answers the question.

Q. Give the Court some idea about the acreage tracts upon which the wells up there are now located.

A. There are 246 gas wells which have been included in my study located on a total of 23 to 24 thousand producing acres.

Q. What I was getting at, are there many very small acreage tracts?

A. Yes, sir, those acreage tracts are comparatively very small.

Q. Twenty acres. Now, then, Mr. Dunn, you are speaking, of course, of conditions that exist up there today regardless of whether there is any additional development, any other wells drilled, but your testimony is that by producing all wells that are actually there according to the formula prescribed by the Railroad Commission—I want you to state to the Court then whether that would bring about a substantial increase in the ultimate recovery of gas from this field?

A. It would certainly be in the right direction and would cause a greater recovery of gas.

Q. Now, Mr. Dunn, something has been said here about pulling a well down to the abandonment pressure and then repressuring or drainage to that well; I wish you would explain that as best you can to the Court.

A. Well, gas flows in the reservoir in accordance with the difference of the squares of the pressures. By that I mean the difference in the square of the reservoir pressure and the working pressure at the well in the reservoir. And as the reservoir pressure declines, the difference in the squares of the pressures, which is available, becomes less and the flow decreases. That accounts for the decrease in your open flow or the capacity of your well to produce as the

[fol. 502] field becomes depleted. Now, I have prepared a graph which shows the calculation of such a decline on a well. We will assume that we have in the beginning a 350 pound reservoir pressure and we are operating a well, which has been taken for illustration, at a working pressure of 300 pounds. We have set up a difference in pressure of 50 pounds and the difference in the squares of the pressures of 32,500. Now, then, if we project that into the future when the reservoir pressure will have declined 50 pounds until it has become 300 pounds, it will then be necessary for us to maintain a pressure difference of 60 pounds in order to get the same difference in the squares of the pressures and as the field declines further, for instance when the reservoir pressure becomes 181 pounds we will no longer be able to get 1,000,000 cubic feet of gas per day out of that well, which is a flow characteristic as illustrated in the assumption. On the other hand if you take a well with a constant pressure difference, by that I mean that you always maintain a working pressure on the well 50 pounds less than the reservoir pressure—in this assumption I have taken 50 pounds—then the flow from the well must decline in accordance with the graphs which I have shown on figure No. 14. At the time the reservoir pressure has decreased to 50 pounds with a working pressure of zero pounds in the bottom of the well we would be getting a flow of 75,000 cubic feet per day. That illustration we put in here to show the difference in the travel of gas and the velocity of the gas towards this well. You can readily see that gas is flowing to that well at a very slow rate when the pressure has declined in the reservoir. Now, let us assume that 75,000 feet per day is a production which approaches the abandonment production or the production at which we would not care to operate the well further. So when that well has declined in production in accordance with these characteristics which they all must follow to the point where it is no longer profitable it would be abandoned, but suppose that we would wait and do not abandon at this time. The reservoir pressure is 50 pounds; the working pressure on the well to get 75,000 cubic feet per day flow is zero pounds. We close the well in and it immediately rocks up to its rock pressure, which would be something less than the 50 pounds. There must be a differential in the sand [fol. 503] under these conditions between a point in the

reservoir X distance away from the well in order to cause a flow of 75,000. You close the well in and she rocks up, we will say for instance, to 25 pounds. Then we have a difference in pressure in the reservoir from 50 pounds to 25 pounds and the well and the flow will be cut down accordingly and would be very slow.

Q. Then is it your testimony that the process of repressuring after the exhaustion of these wells would be so slow as to amount to a destruction almost of the properties, the gas that is in the reservoir at that time?

A. Well, it would amount to a loss of an appreciable quantity of gas, yes sir.

Q. Now, you heard the testimony of Mr. Gill along this same line?

A. Yes, sir.

Q. And I am going to ask you this question: If it isn't a fact that Mr. Gill has assumed more or less of an ideal situation and that you have assumed a practical viewpoint as viewed from the operators that are actually trying to get the gas out of the field?

A. Senator, I would say this with reference to Mr. Gill's testimony in comparison to mine, that I see very little difference in the theoretical application and the principles applied except that I have carried my calculations down along the theoretical lines only so far as you would in practical operation and from there on I have taken into consideration what actually happens in the operation of a field. I have taken into consideration also the pressure differentials that we find to exist in the reservoir. I have analyzed those in respect to the ultimate abandonment pressure.

Q. Is there any reason to expect that the same differentials only on a modified scale would exist at the time the reservoir is abandoned? Wouldn't the differentials be substantially the same at the time the wells are abandoned?

[fol. 504] A. The differential would be substantially the same if your production in the future is in—not in the same amounts as they have been in the past, but in the same proportion. In other words, the difference of the squares of the pressures comes in there again. They could be in lesser amounts and maintain the same differential that exist now. For instance, this illustration in figure No. 14 that I have given would give the same pressure differential at 75,000 production that it gave at a million

cubic feet production earlier in the life of the well. Now, then, if you follow a constant or a similar production condition that will give you the same differences of squares through the reservoir, your pressure differentials will be the same at the end.

Q. Now, then, to the extent that the order of the Railroad Commission requires production from each of the wells in the field, tell the Court whether or not to that extent, at least it would bring about ultimately conditions that would result in a greater recovery of gas from the field?

A. I think that it would; and I think the result will be a greater recovery of gas and that the order will improve the situation, yes, sir.

Q. Of course, the question of drilling future wells is a speculation in which none of us can indulge?

A. That is true.

Q. But accepting the picture as it actually exists on the day this order was issued and applying it to the East Panhandle field in Wheeler County, do you see anything in the order that would not bring about a substantially more uniform production from existing wells than now exists at this time?

A. No, sir, I do not.

In my opinion, there is no drainage from the East field to the West field. The condition that I have spoken of with reference to the East Panhandle field would also apply to the West Panhandle field in so far as the ratable taking is [fol. 505] concerned, and I have drawn profiles there of pressure conditions in the West Panhandle field in the same manner as I have in the east. Assuming that the stripping operations in Wheeler County are stopped, there will be, I estimate, approximately 60 wells without pipe line markets or without any connection whatsoever in that county. Regardless of what has transpired in the past, the production from these wells, the drainage that has existed, there would be, in my opinion, a greater production of gas and a substantial recovery of a great amount of gas in Wheeler County by production from those wells in a fairly uniform manner, than there would be if those wells, which have no connections, were closed in. Lone Star Company owns 78 wells in Wheeler County at this time and takes from 143, which take is about the same as Consolidated Gas Utilities Company. We could supply our

demand very easily from our wells without committing any physical waste in the production of the gas, so far as the individual well is concerned.

Q. Then in the operation of your company you have not only advanced this as a theory, but you have put it into actual practice so far as your take from the Panhandle field is concerned?

A. It has been put into practice since the beginning with our company.

Q. Now, with reference to the West Panhandle field, Mr. Dunn, I will ask you to tell the Court whether or not the same conditions as to the recovery of gas, the ultimate recovery of gas in the West Panhandle field would not prevail as in the Wheeler County with a portion of the wells shut in and a portion of them producing?

A. Yes, sir, similar conditions would exist.

Q. It is in the testimony here that a substantial number of those wells when stripping is stopped will have no connection whatsoever. Now, would it bring about a greater ultimate recovery of gas from the West Panhandle Field by having those wells uniformly connected throughout that field than it would be to have some of them closed and some of them producing?

[fol. 506] A. It would bring about a greater production with all of them producing.

Q. And you have approached this question from the practical standpoint of a gas utility or operator?

A. I have approached the question from an analysis of the conditions that exist and put in my analysis the practical conditions which will affect it.

I have prepared an exhibit which contains all the figures and some of the maps which have been discussed here before the Court, which is on a smaller and more convenient scale, which is defendants' exhibit No. 70. (The book referred to was then marked "Defendants' Exhibit No. 70").

Cross-examination.

By Mr. Morgan:

Q. Mr. Dunn, you say the Lone Star Gas Company proceeds on the theory that the wells ought to be distributed over a wide area in Wheeler County?

A. No, sir, I didn't say that.

Q. What was it you said about the policy of the Lone Star up there?

A. Was to purchase gas as well as produce it.

Q. To purchase as well as produce it?

A. Yes, sir.

Q. What is the object of that, did you state to counsel?

A. I didn't state the object of it, as I recall, except that it was the policy of the Lone Star Gas Company.

Q. Didn't you say that the policy would result in a greater ultimate recovery of gas?

A. Yes, sir.

The Lone Star, altogether, owns fifteen thousand acres. They have wells located on approximately six thousand acres. The average acreage per well is less than 100. This company has six thousand acres and 78 wells which would make about 75 acres, or somewhere around there, but it didn't drill all those wells. It owns them at this time.

[fol. 507] Q. Now, coming to these gradients that you testified about and introduced in evidence, I see here on your figure No. 2 a very high gradient indicated here at the time you say these wells over here (indicating) would be abandoned. About what would that pressure grade up to if the low point right here (indicating) is 25 pounds?

A. It would depend on your reservoir conditions——

Q. Well, according to your figures here, your calculations.

A. This figure here is the ratio. If your sand resistance was such that you got a slope——

Q. (Interrupting.) I didn't ask you that, Mr. Dunn. I think I can make myself clear. I am asking you what you intended for your cuts or figures here to indicate the pressure gradient would be here (indicating) on figure 2 of your Exhibit No. 64 at the time you say the wells over here (indicating) from which the gas is being produced as shown by that figure, would be abandoned?

A. I cannot answer that question, Mr. Morgan, unless some pressure values are assigned, either arbitrary or actually that exist in the reservoir.

Q. It might represent 30 pounds or 50 pounds or 150 pounds?

A. Yes, sir, that is right.

Q. And you couldn't tell the Court what the gradient would be then? There would just be some gradient there?

A. I explained, Mr. Morgan, that that was a fundamen-

tal illustration and I did show what the gradient is in these other illustrations.

Q. Then this dark portion here (indicating), if you assume 25 pounds to be practically at the black line below, this dark portion would in no sense represent the gas left in the reservoir where you cannot tell the Court how high the pressure would be over here (indicating), would it?

A. You cannot figure gas without knowing the pressure, that is true.

[fol. 508] Q. Well, my question is that this would not indicate the quantity of gas left in the reservoir since you do not indicate the pressure to be included in your figure 2 of Exhibit 64?

A. No, sir, that indicates—that does not indicate the gas in the reservoir.

Q. It simply indicates that there will be some gas there at the time these wells get down to 25 pounds pressure?

A. Yes, sir.

Q. That is what you mean to say?

A. Yes, sir.

Q. Now, you don't mean that you understood the witnesses testifying for the plaintiff here to say that every well would be abandoned as soon as it got down to 25 pounds?

A. No, sir, I did not, I understood from one of the witnesses that they estimated that the average pressure at the abandonment of the field would be 25 pounds.

Q. Yes, the mean pressure throughout the whole reservoir would be.

A. That was my understanding of their testimony.

Q. Just as long as there is a high gradient out away from the producing well and the well is produced down to where it has a working pressure at the bottom of 25 pounds, there will be a flow of gas, won't there?

A. There will be a flow of gas any way where there is a difference in pressure.

Q. A difference in pressure and the difference in the ultimate recovery is a matter of time, isn't it?

A. It certainly is.

Q. And when you say that you could get more gas out of a field by drilling a well on every tract in the field, you were speaking about a given time, down to a certain date

you will get more gas that way, if you put that date far enough ahead to get into low pressures?

[fol. 509] A. No, sir, that is not what I mean.

Q. Well, what do you mean by it?

A. Well, I mean that you will get more gas because the wells will produce a commercial quantity of gas or a quantity that justifies operation of the wells a longer period of time because you cut down the distance in the reservoir.

Q. All right. This is Wheeler County (indicating), this pressure profile (indicating), what does this point right here (indicating) represent, this black line? Tell me what this black line represents across those pink line surveys here (indicating).

A. That black line is a plotting of the pressures as between wells, the wells of which are shown above.

Mr. Small: Figure No. 8.

Mr. Morgan: This is figure No. 8, exhibit—figure No. 5, Exhibit No. 66. This thing doesn't purport to show the pressures that will exist at the time of abandonment; you are not talking about that in connection with that figure, are you?

A. That figure shows the pressure that exists now.

Q. That exists now. Well, now, there is already a low gradient or low pressure area clear across the north end of that field or the northeast end of that field, isn't there, Mr. Dunn?

A. Yes, sir.

Q. And there is a high pressure gradient all along the southwest side of that field; in portions of it it is still at its original 430 pounds due to the lack of time for drainage and encroachment to get over there, isn't that correct?

A. Are you speaking of the entire field?

Q. The entire field.

A. Yes, sir.

Q. Down in Wheeler it isn't as high on the southwest side as it was in the beginning?

A. No, sir.

Q. But it is relatively high?

A. Yes, sir.

Q. As compared with the pressures over there on the northern oil producing—north portion where oil is being produced?

[fol. 510] A. Yes, sir.

Q. And has been produced. In your testimony here concerning these different drawings and figures which have been introduced in evidence and which are shown in the pamphlet that has been introduced, you have assumed that this field is going to be abandoned when the present wells have been depleted down to a pressure of 25 pounds at the bottom of the well, haven't you?

A. No, sir.

Q. You have assumed that no other wells were going to be drilled?

A. No, sir.

Q. You haven't assumed that?

A. No, sir.

Q. Well, I don't understand your testimony, if your last two answers are correct. Why do you say then that there will be a lot of gas left over here in a high pressure area if the order of the Railroad Commission is not put into effect?

A. Mr. Morgan, I would like to explain my last two answers to you.

Q. All right.

A. First, I want to show that I have not assumed that the abandonment pressure of the wells would be 25 pounds. I made no assumption of the abandonment pressure of the wells, but I have shown that whatever the abandonment pressure of the wells is or of the reservoir, taking figure 1 as an illustration, the base line being the abandonment pressure of the well, whether it is zero pounds, 25, 50 or 100 pounds, then progressively higher pressures will exist in the reservoir away from the well and above the abandonment pressure, whatever it is. Then in the illustration that I give as to the quantity of gas I calculated the gas above the abandonment pressure and not gas below. In other words, I do not show the total amount of gas that would be left in the reservoir.

Q. Then I understand that in stating that there will be more gas recovered if the wells are distributed—if all of the wells now drilled are produced and there is a wider distribution of the production as a result of that situation that there will be fewer places where there will be a higher gradient and pressure left at the time the field is aban-

[fol. 511] doned, is that what you mean?

A. Yes, sir, figure 4 illustrates what I mean there.

Q. All right.

A. Figure 4 illustrates that if you had two wells instead of one producing gas that you would be able to pull the pressure down in the reservoir before abandonment at two places instead of one.

Q. At two places instead of one, but that does not show that the gradient would be pulled down before there was an abandonment of the field to where there would not be substantially any more gas left than if you had produced it from two wells, does it?

A. The time factor is illustrated in so far as it controls the abandonment of the wells.

Generally speaking, the wells connected to these pipe lines, the different pipe lines which are transporting gas from that field, are distributed from the east half of Wheeler County across the west half of Wheeler County, Gray County, Carson County, the southwest corner of Hutchinson County, the northeast corner of Potter and on across Moore County. There are areas there that have no wells connected to pipe lines. The wells which are not connected to pipe lines and which produce sweet gas are distributed over the field. I don't know how comparable that distribution is to the distribution of the wells that are connected to pipe lines.

Q. Don't you know that they extend from eastern Wheeler County right along the same trend except that most of them are between the pipe line wells and the oil fields, from one end of that field clear up to the other?

A. Mr. Morgan, when you say "extend" I get the impression that you mean that they are continuous.

Q. No, I mean the distribution; isn't the distribution practically the same distribution as the pipe line wells up through the field; I don't mean to a mathematical certainty.

A. You will find them in different portions of the field, yes, sir.

[fol. 512] The Presiding Judge: Wait a moment, I understood Mr. Morgan's question to be that where the pipe line drilling and production exists, the other wells are just about those same places and that where there are no pipe line wells, practically there are no other wells.

A. I don't know whether——

The Presiding Judge: Is that what you mean?

Mr. Morgan: Yes, in a regional sense.

A. In a regional sense, that is true.

Q. I don't mean to a mathematical certainty.

A. There are exceptions, yes.

Q. In a regional sense there is the same general distribution of the pipe line wells from one end of the reservoir to the other as there is of wells which are not connected to pipe lines?

A. Yes, sir.

Q. From a regional distribution standpoint. Now, will you tell this Court that when this great gas field reaches the point where it is abandoned altogether that more gas will be recovered from that great reservoir if the production be had from the wells that have been drilled there down to date, including those not connected to pipe lines than if produced from the wells that are connected to the pipe lines?

A. Mr. Morgan, I made the statement that if the wells that are there now, if all of them are produced there will be more gas recovered in the end from the field than if those wells—some of those wells are not operated.

Q. That is your statement. You concur in the statement that has already been made in the record that substantially 80 per cent of the acreage in Wheeler County has not been drilled at all?

A. Yes, sir, I have mentioned that in the exhibit there. I failed to mention it a while ago. I figure 81 per cent of the acreage in Wheeler County is undeveloped as of this time.

Q. And that same condition obtains on through the West Panhandle field, doesn't it?

A. I don't know whether that same percentage obtains or not; a similar condition obtains.

[fol. 513] Mr. Morgan: I notice testimony here by this witness in the exhibit referring to water encroachment and he had not authenticated the statements therein contained and I move to strike out of the exhibit filed by this witness his testimony concerning water about which he has not been examined in the presence of the Court.

Mr. Small: No objection.

The Presiding Judge: You mean in this exhibit?

Mr. Morgan: Yes, sir, Exhibit No. 70.

Mr. Small: There is an incidental reference there, Judge.

The Presiding Judge: All right. You said that the ultimate recovery of that field, taking into consideration the time factor—the practical ultimate recovery within reasonable time would be much greater if the field was intensively drilled, haven't you?

A. That statement is true, however, I based my testimony strictly to the wells that are drilled now and will be drilled in the future, whatever they be, that is true.

The Presiding Judge: Well, then, I will just take for my assumption, if the field were very intensively drilled, drilled as much as you drilled yours for instance, in a very much shorter time, of course there would be a very much heavier production and ultimately you think—leaving the time factor out—there would be more gas produced than if you gave it plenty of time and produced it from a few wells, or do you differ from the plaintiffs' witnesses on that?

A. I differ only to the extent that the time factor is a very important factor in the recovery of gas, the rate at which the gas will flow in the reservoir when the pressure has been depleted to low pressure.

The Presiding Judge: Yes. Now, the practical situation in that field is, as just stated to Mr. Morgan, that instead of having the field—especially the west part of it and the same thing below—instead of having the field there like a checkerboard, spotted all over it and very closely, the eastern edge practically of that field is where the drilling has occurred, isn't it?

[fol. 514] A. The drilling in the eastern portion of the field has been concentrated in some small areas, yes, sir; of course, there are wells throughout the field.

The Presiding Judge: Aren't they rather scattered?

A. They are more scattered in the west than they are in the east, yes, sir.

The Presiding Judge: Now, those wells throughout the field, are they connected with pipe lines or are they strippers or what, do you know generally?

A. Both kinds.

Q. Both kinds?

A Yes, sir.

Q. Throughout the field?

A. Yes, sir.

Q. There are some wells in the high pressure localities, a few wells in the high pressure localities which are doing both kinds of service?

A. Yes, sir.

Q. I see. But the great bulk of that field, the development in the field, both east and west—I say "the east line", I suppose that is the north line, is it? What is the oil field?

A. The oil field is on the north.

Q. Well, that is what I mean instead of east, I mean to say this drilling and development, the pipe lines and strippers and carbon blacks and others is on the north line of the field, isn't it?

A. The concentrated development on the north part of the field is due to the oil field.

Q. I know; I don't care what it is due to, but isn't most of that development in a line along one side of the field, the thickest development?

A. Yes, sir, on the north.

Q. A great deal thicker?

A. Yes, sir.

[fol. 515] Q. Now, in localities where there are, say, 28 or 30 wells fairly close together, you think that if the whole 28 over on the north side were operated they would drain from the undeveloped part more gas than if, say, only 14 of them were operated?

A. The drainage would be in proportion to the production and the pressure differentials that would be there.

Q. But would that not be—with the illustration I have cited—a drainage on the large area with 28 to 14 wells situated right together, a very inappreciable difference? Aren't you just taking now the theoretical? Would there be much practical difference between operating 28 wells on a 4,000 acre tract and 14 wells on that tract in drilling the enormous Panhandle field?

A. The difference would get smaller and smaller the more concentrated your wells became, that is true. Now, it would depend upon the reservoir conditions that were found there; for instance, in some of those pressure profiles that I have drawn there the pressure difference in a half mile will be 50 pounds and where that gradient is deeper than there is more gas per lineal foot of distance.

Q. What I am trying to say is that if you had the 28 wells spotted around over that field and they were all operating that would tend to produce a much more equable drainage than if they were all in one spot?

A. That is absolutely true.

Q. And if you drained 28 to 1—I mean if you intended to drain that field with one well on a 640 acre tract or 28 wells on a thousand acre tract—the same 640—you could do a little better drainage with the 28, but for practical purpose the one and the 28 would drain about the same for that enormous field, wouldn't they, if they all are spotted right there together?

A. If we give the proper consideration to the time factor, assuming the same rate of production from the 28 as we get from the one, if we had one well that is large enough to produce a rate the same as the 28——

[fol. 516] Q. It wouldn't make any difference whether you had 28 or one, would it?

A. Well, it would make considerable difference under certain circumstances, Judge, for instance, in a distance there of three miles you have assumed an illustration of one—of a half a mile distance; if you had them all located in the center, then in the distance of three miles in that part of the reservoir where I drew that example it was 500,000,000 cubic feet in the first section that was crossed. Now, that was the distance we will say of one mile. If you cut that in half it will be 250,000,000. If you cut it in fourths or something of that proportion, it could be an appreciable quantity of gas.

Q. I mean the difference between one and 28 wells drilled —28 drilled thickly in the same section where the one was, were draining that 7 or 8 million acres, whatever acres there are out there, would it make a big difference whether you tried to drain it with one or 28 in the ultimate recovery?

A. No, sir, it wouldn't make a big difference if they are located closely together. I am not sure I got your point a while ago. I would like to call your attention to a graphic illustration of what that means.

Q. Let me make clear what I am trying to say. I can understand that the wide distribution of wells is exactly in line with what you are talking about, but if there are 14 wells or 28 wells within a defined area, a closely defined

area, as to the draining of the whole field would it make any practical difference in the ultimate recovery whether you took that out of the 14 or out of the 28?

A. It will not.

Q. That is what I am talking about.

A. This figure No. 1, that pressure gradient in between those two wells illustrates that point.

Q. All right.

By Mr. Morgan:

Q. Mr. Dunn, if every well is produced in the Wheeler County Area with a limited outlet down there, won't it run the takes from each well down to where it is very difficult to obtain operating expenses, speaking of the practical situation?

[fol. 517] A. I don't know what you mean by operating expenses, Mr. Morgan.

Q. Well, return on the cost that you have there including the fixed charges on your well cost.

A. Well, we might make some calculations on certain assumptions if you care to.

Q. Don't you know that the Lone Star has been in a continual war down there with the people from whom it has been buying gas because it wouldn't take any more gas from the particular wells connected to it?

A. Why certainly we have been criticized because we could not take and sell more gas but I don't see that that has anything to do with it.

Q. If you extend that out and take in some more people why, that just reduces the quantity of gas you are taking from each well?

A. Under no assumption could you assume that the Lone Star Gas Company would take any more people when they already have more than half the wells in the field now connected.

Redirect examination.

By Mr. Small:

Q. The illustrations that you have made here show graphically the difference or the increased recovery where you produce from one well over what you get while producing

—produce from two wells over what you get producing from one.

A. Senator, there has been some confusion but it doesn't show gas; it shows a pressure gradient which has been assumed and to that extent it does represent gas but no definite quantity.

Q. It is just illustrative of the point?

A. Yes.

Q. But of course the closer you get them together, the smaller would be the percentage left in the ground?

A. Yes.

Q. And the wider you get them apart, the greater the percentage, that is true, is it not?

A. Yes, sir.

[fol. 518] Gordon Griffin, witness for defendants-appellants.

Direct examination.

By Mr. Cheek:

My name is Gordon Griffin. I am a consulting petroleum and gas engineer by profession, and have been practicing that profession since 1929. I have a degree in geology, and have had about 6½ years practical experience. I was formerly the Chief Petroleum Engineer of the Railroad Commission of Texas and left their employ in October, 1935. While Chief Petroleum Engineer of the Commission, I made, or caused to be made under my direction, an investigation of the matter of fixing efficient gas-oil ratios for all the wells in the Panhandle field of Texas.

We found that on our study of the gas-oil ratios in the Panhandle field that it was a large problem and it could not be solved immediately. We issued an order giving a gas-oil ratio of 12,000 cubic feet per barrel of oil and later issued another order reducing that to 10,000 cubic feet per barrel of oil and it was our idea to reduce that ratio progressively and make a study each month and continue our study until we had reached the minimum efficient gas-oil ratio for the Panhandle field.

Q. Did you recommend to the Commission that they fix a 5,000 gas-oil ratio and did you receive strenuous objec-

tions from any oil operators that the matter should be thoroughly investigated, they could not operate their wells at that ratio?

A. I made a recommendation that the gas-oil ratio should be 2,000 cubic feet per barrel of oil but there was objection, and since the field had been produced primarily for gas and there was no uniform method of production, the wells were not tubed, the Commission issued the initial order of 12,000 and the subsequent order of 10,000 in order that the operators might have time for reconditioning their wells and that the engineers might have additional time to make studies of the results obtained.

[fol. 519] Q. Was it the policy of the Commission in connection with the matter of gas-oil ratios to proceed by trial and error and slowly and in an experimental way to see what could be done to that situation?

A. Yes it was the idea that since the field had been producing under its present condition for years in the past that the Commission did not want to enter a rigid order at the beginning but to arrive at efficient gas-oil ratios progressively by progressively reducing the ratio.

Q. And in so far as you know that is the policy of the Commission today on that matter?

A. That was the—I couldn't say that was the policy of the Commission, but I will say that was the data that was presented to the Commission.

Q. And the recommendations of the engineering department were accepted by the Commission?

A. Yes, sir.

Q. Now, Mr. Griffin, are you familiar with the general conditions which exist in the West Panhandle oil and gas field with reference to permeability and porosity?

A. In general, I am.

Q. Is that field a field of uniform permeability and porosity or are there wide variations in different parts of the field?

A. Apparently there are wide variations in the permeability of the Panhandle field and in general it is not considered a field of high permeability.

Q. Now, what indicates that fact?

A. The indications are that you have tremendous variations in the potentials of wells that were tested, and I will admit though, however, that the conditions beneath those

wells are not constant, but the potentials vary practically in every well.

Q. Vary sharply?

A. Vary sharply—well, in many cases they vary sharply, and the field is slow in equalizing the pressures and so I would say that the whole indications are that the field is not one of high permeability.

[fol. 520] Q. Well, what effect does that fact have on the drainage of gas from one portion of the field to another?

A. I would say that the gas would travel rather slowly under those conditions.

Q. Did you hear Mr. Dunn's testimony?

A. I did.

Q. To avoid the repetition of the same idea about ultimate recovery, do you agree with his conclusion that if you produced a gas from the Panhandle field from the 517 wells which are there now that you would, at the exhaustion point of the field, recover substantially more gas than if you produced the gas which is produced at that point from only the wells which are now connected to pipe lines?

A. I do.

Q. Did you hear Mr. Cottingham and Mr. Fowlston testify about the effect of water in the Panhandle field?

A. I didn't hear Mr. Cottingham's testimony but I know the character of his testimony and what it was.

Q. You heard Mr. Cottingham's testimony before the Commission on that point?

A. Yes, sir.

Q. Do you or not agree that their testimony to the effect that the water which is present in the Panhandle field is an active force and that as the field is produced at an unratable production of oil and gas it can cause that water to become a serious hazard in gas producing portions of the field and result in entrapment of gas and the ultimate loss of gas in the field?

A. I would rather answer that question this way Mr. Cheek, that the field has been produced at such a rate that the Panhandle field has never had the opportunity to be benefited by any water drive present. It is a similar characteristic that we have in the East Texas field, that if the allowable production in the East Texas field was 6,000,000 barrels a day the oil would be withdrawn so fast that they would not benefit by the hydrostatic head and it would have

no bearing on the ultimate recovery of the oil and for the maintenance of pressures and I think a like situation exists [fol. 521] in the Panhandle field, maybe not on as large a scale.

Q. However, it is or not your testimony that there is an infiltration of water—well, answer that question.

A. I do.

Q. And is it or not your testimony that large concentrated withdrawals of gas in the West Panhandle field can cause that water to become a hazard and reduce the ultimate recovery of gas?

A. I do.

I know in a general way the route that the main pipe line of the Texoma follows through the West Panhandle field. There exists through the West Panhandle field in close proximity to the pipe line of the Texoma Natural Gas Company and also other pipe line companies in that field gathering systems which are owned by people, who, at this time, have no market for light and fuel purposes. In order for the Texoma to get any gas that it might choose to buy from operators in that field, they don't have to lay many feet of gathering line to get it; the gathering lines cross each other and it would only be necessary to make a connection at that point.

Cross-examination.

By Mr. Morgan:

I just said the gas was available there, that is all, that is all I can say. They would have to agree on a price, and there are a lot of complications involved.

I served as an employee of the Railroad Commission twice, one time for about 1½ years. I left their service for 7 or 8 months, and then, this last time I have been with them approximately 1½ years. My service goes back to 1932. I was not advised of the conditions up there all along during my first time with the Commission. During the second time I was with the Commission, I was. Since beginning of our study in June of this year I have known about this water coming into the Borger area and these other low pressure areas. I did not know of the presence of water up there before that time. The Commission knew about it. I don't think there have been reports made about it

[fol. 522] every month, and I am sure that the Commission of themselves knew of the water condition, however, I did not. I haven't any different ideas about this water situation from what I had in July. It is a very difficult matter to trap gas off with water to where it won't go right on through the water to the area of low pressure.

Q. You open an ordinary soda pop bottle and the gas immediately goes to atmospheric pressure.

A. That would be under different conditions though.

Q. It trickles right through the water; I am talking about its ability to travel through water?

A. You couldn't compare the Panhandle field to a soda pop bottle.

Q. I am just asking you if that is not what happens?

A. No, sir.

Q. Doesn't the gas go right through the water and get to the hole which corresponds, roughtly, to the well?

A. It does, but here is what I am trying to say, Mr. Morgan, in an open container you don't have the resistance or any of the conditions that you would find the Panhandle reservoir; I don't mean to be——

Q. (Interrupting.) It is a difference in rate of flow. As a matter of fact, the gas that is produced from these oil wells is produced from its original place of rest in that reservoir at the time it was first discovered right through the oil, isn't it?

A. That is true.

We did not being the study of the fixing of gas-oil ratios up there until we had finished the potential tests of the field. That was not before July, 1935. The tremendous waste of gas—production of gas in the oil field—has been going on up there since 1925, and no effort was made to control the production of that gas until after July of 1935.

[fol. 523] Mr. Hill: We offer the affidavit of Mr. F. V. L. Patten, who is present in the court room and subject to cross-examination; and in connection with this testimony defendants' exhibit No. 71. This exhibit shows an analyses of the samples of water taken from the wells showing water in the Panhandle field. The effect of this statement is from a summary of the analyses that 12 out of 19 wells showing water on which analyses were made that such water is definitely shown to be bottom hole water. 18 out of the 19 wells probably have bottom hole water; 12 definite and 18

probable out of 19. These analyses were made in the laboratory of the University of Texas.

[fol. 524] R. D. FIELD, witness for defendants (deposition).

Direct examination.

By Mr. Cheek:

I am employed as local representative in Amarillo for Panhandle Eastern Pipe Line Company. This company does not own leases and gas wells in the Panhandle gas field. They own a pipe line in the Panhandle. The Texas-Interstate Pipe Line Company, a direct subsidiary of the Panhandle Eastern Pipe Line Company, owns leases and wells. The Panhandle Eastern or one of its subsidiaries withdraws gas from the Panhandle field. The Panhandle Eastern owns a pipe line for the purpose of transporting gas from the Panhandle gas field. Its main line is approximately 900 miles in length. Its terminus is in Indiana. Seventy-three towns and approximately 120,000 customers are supplied with gas by the Panhandle Eastern Pipe Line Company or its subsidiaries from the Panhandle field. Some of the principal towns are Springfield, Illinois, Macon, Missouri, Fulton, Missouri, Danville, Illinois and other towns in there. There are no large towns at present. The Panhandle Eastern Pipe Line Company also withdraws gas from the Hugoton, Kansas, field, but its principal withdrawals are from the Panhandle field. The gas which is supplied from the Kansas field is commingled in our lines with gas from the Panhandle field.

The subsidiaries of the Panhandle Eastern Pipe Line Company began the acquisition of leases in the Panhandle in the late fall of 1929 and the spring of 1930. Our company owns only sweet producing properties, although we [fol. 525] own some leases that might be classified as sour. We own leases in Moore, Hutchinson, Potter, Carson and a few leases in the extreme east side of Hartley County. We own about 33,000 acres of leases in the Panhandle gas field and about 27 producing wells.

My general information is that all the cities and towns within a radius from 900 to 1000 miles of the Panhandle field are at this time supplied with natural gas.

I was Treasurer for possibly five months and after that Secretary and Treasurer of the Panhandle Conservation Association. The first meeting of this organization that I know of was on February 2, 1934, at Fort Worth, where a group of landowners and interested people held a meeting and formed the organization. The following attended that meeting: Joe T. Sneed, Jr., landowner; C. E. Weymouth, landowner; J. G. Dickinson, Superintendent of Production of Texoma Natural Gas Company; R. E. Wertz, President of Amarillo Gas Company; Chas. H. Keffer, Attorney for Canadian River Gas Company; John Moyer, with Stanolind Oil & Gas Company; L. E. Barrows, with The Texas Company; H. M. Stalcup, representing the Skelly Oil Company; A. C. Smith, representing a group of landowners; Sam Sayers, representing the Masterson Estate (landowners); W. B. Hamilton, of the West Texas Chamber of Commerce; Dr. E. M. Waits, President of Texas Christian University; John W. Naylor, Oil Editor of Fort Worth Star-Telegram; and L. E. Bredberg, of the Oil and Gas Journal.

I have been an officer of the Panhandle Conservation Association since it was organized.

[fol. 526] The purpose of the Association was to educate the people of Texas and the Panhandle in particular about the dissipation of their oil and gas field that was taking place principally by stripping operations. By stripping operations I mean the processing or extraction of gasoline from dry gas, allowing the residue to blow into the air, dissipating the field reservoir. The stripping of gas in large quantities began with the passage of the so-called Sour Gas Law in 1933, and it was in operation when the Association was organized.

I have in my files membership cards which the members of the Association signed at the time they joined the Association. The card you have is one of the membership cards. These cards were signed by those who became members of the Association. The membership fee was #1.00 per man. The Association had 326 paid memberships, and I believe 39 who signed the cards of membership never paid.

There were some gas pipe line companies as such who were members of the Association. As to naming the gas pipe lines who were members of the Association, I would have to refer to my books. The Texoma Natural Gas Company and the Canadian River Gas Company were members of the Association. I think every gas company in the West Panhandle field was a member. With the exception of the Texas Panhandle Gas Company and the United, which operate in the Wheeler County field, I think every gas pipe line company was a member of the Association. The officers of the Association were Joe Sneed, President; Chancellor Weymount, Vice-President. The directors were H. M. Stalcup, E. C. Britain, Walter S. Pendleton, J. G. Dickinson [fol. 527] and Chas. H. Keffer. Mr. Keffer resigned about two months after the organization, and then Hal P. Bybee became a director in place of Mr. Keffer. It is my understanding that Mr. Keffer, at the time he was a director of the Association, was attorney for Canadian River Gas Company. Mr. Dickinson, at the time he was a director, was and still is Superintendent of Production of Texoma Natural Gas Company. Mr. Sneed and Chancellor Weymouth principally directed the policies of the Association. Mr. Sneed is a ranchman who has land in the Panhandle gas field, and who lives in Amarillo. He probably owns 90,000 acres of gas land. His land is principally under lease and has several gas wells on it. Various oil and gas companies have leases on his land, including many large pipe line companies. Canadian River Gas Company, Texoma Natural Gas Company and Panhandle Eastern Pipe Line Company all have leases on Mr. Sneed's land. The pipe line companies own the principal number of gas wells on his land. There are some wells that are owned by the oil companies.

As to the type of activity that the Panhandle Conservation Association indulged in, it was educating the public to the dissipation of the Panhandle oil and gas field, principally with the object of creating public opinion to cause a repeal of the law which permitted the extraction of gasoline from natural gas and the popping of the residue gas into the air. The object was interesting people generally in the conservation of oil and gas.

As to why pipe line companies were concerned, it was because of their heavy investments like some of the other

members of the Association. As to whether our company [fol. 528] thought that its investments in leases and producing gas lands were prejudiced or endangered by the continuation of the condition which existed at the time the Association was formed, yes, I think they thought that, and everyone else who was informed about the gas or oil field, about the wasteful operations at that time, thought so.

Q. Were all the gas companies concerned about the harm or destruction that might result to their reserves of the condition were continued which existed at the time the Association was formed?

A. Very much so, in that they owned seven times as much as any landowner, they were naturally interested that much more than the average landowner as far as their investments were concerned.

Q. They did think that if the policy of permitting the stripping plants to operate were continued, their reserves would be endangered and might be destroyed?

A. I don't think there is any question about that.

As to the particular direction that the activities of the Association followed in accomplishing the object of the Association, the repeal of the sour gas law, there were membership drive- for the landowners and producers interested in the Panhandle, newspaper advertising, radio talks, poster and billboard advertising.

Direct examination.

By Senator Small:

As to the dissemination of publicity condemning the waste that was taking place in the Panhandle by whatever [fol. 529] means we could get it before the people, I would say the dissemination of correct information about the field. As the general interest increased, there was a large number of articles calling attention to the existing conditions appearing throughout the State.

Direct examination.

By Mr. Cheek:

We inserted advertisements in various newspapers in the Panhandle pointing out the possible results of the continuation of the stripping practice, principally the Amarillo

Daily News, the Pampa Daily News and the Borger Herald. The Association inserted advertisements of this character in about six newspapers located in the Panhandle of Texas. They were the Pampa Daily News, Pampa, Texas; Borger Daily Herald, Borger, Texas; Childress Index, Childress, Texas; Dalhart Texan, Dalhart, Texas; Panhandle Herald, Panhandle, Texas; Shamrock Texan, Shamrock, Texas; Spearman Reporter, Spearman, Texas; Wheeler Times, Wheeler, Texas; Amarillo Weekly, Amarillo, Texas, and the Amarillo Daily News and the Amarillo Globe.

All the advertisements that the Association caused to be inserted in newspapers and all the radio talks and billboard advertising that the Association sponsored had the same general object, that is, to foster a repeal of the sour gas law and to make it unlawful to continue the operations I have described, and also any other particular measure of conservation of the field, oil or gas. The Association was generally supporting the stopping of stripping in the Panhandle along with its other conservation activities. It was [fol. 530] sponsoring any type of legislation which would have the effect of stopping the stripping operations and the popping of residue gas into the air.

I have a file of the newspaper advertisements which we caused to be inserted in the various newspapers in the Panhandle. It is in book form. This is a copy of the advertisements which the Association caused to be inserted.

Mr. Cheek: We offer this file of advertisements as Exhibit No. 2 to this deposition.

These advertisements were inserted in various Panhandle newspapers. They were inserted, generally speaking, in the newspapers which I enumerated in my answer to a previous question. These are all the advertisements that I recall.

Yes, sir, we also sponsored radio advertising, we hired time over the radio in the Panhandle where speakers would talk on the general subject of the public harm resulting from stripping operations. The first activities were sponsoring the broadcasting of the football game of the Amarillo Sandies. Thereafter, short programs every day or so were given on the local station. By broadcasting the football games, I mean that we would have an announcer describe the football game and then at various lulls in the game we

would cause talks to be made about the dangers of stripping operations and their effect on the Panhandle of Texas. We also caused short announcements to be made about the dangers of these wasteful operations in the Panhandle, in addition to broadcasting the football games. Our radio activities lasted about five months, beginning in the fall of 1934 and continuing into the spring of 1935.

[fol. 531] The purpose of these advertisements, radio talks and the like was to give the facts of the conditions as they existed in the Panhandle, asking their help in remedial measures to have it stopped.

Q. Were you not trying to create in the public at large a feeling that the public interest was endangered, that the public interest in the continuation and preservation of the supply of natural gas in the Panhandle was endangered by the continuation of the stripping practice?

A. Yes, sir.

The Association conducted mailing activities. As to the direction they took, generally speaking, it was mailing copies of local advertisements in the newspapers to influential or interested people over the State. I generally selected the people to whom these advertisements were mailed. As to the type of individual the advertisements were mailed to, they were State and Government officials, newspapers editors, the Legislature of Texas, lawyers and prominent people throughout the State. They were not mailed to preachers, but they were mailed to bankers and many State and County officials throughout the State. The Association also mailed to newspopers throughout the State of Texas a mat showing a picture of the State Capitol at Austin, under which picture appeared these words: "Photographed above is the famous capitol building at Austin, second only to the National Capitol in size. Here the new Texas Legislature convenes early this month to face problems considered greater in variety and importance than ever before. Action is anticipated promptly to halt natural gas wastage in the Panhandle. This wastage has grown so rapidly, that reports to the Railroad Commission reveal [fol. 532] that each day it now equals the daily domestic and commercial gas consumption of the entire United States. Taxation, liquor laws, relief, oil control and other vital subjects demand early solution." We mailed mats of

that character to various papers throughout the State of Texas just prior to the time that the 44th Legislature of Texas convened. We mailed about 750 of these mats to various newspapers. I have a scrap book showing the various papers in which those mats, or mats of that character, were printed. Approximately 440 newspapers accepted that mat and printed the picture and the language under the picture.

The Association also attempted to get various organizations in the Panhandle to pass resolutions petitioning the Legislature to remedy the alleged wasteful conditions by new legislation. I have a file of the resolutions passed by various organizations in the Panhandle and elsewhere, which is Exhibit No. 3 to this deposition.

The Association caused advertisements to appear on approximately 50 billboards located in the Panhandle. These advertisements remained on the billboards from 60 to 90 days. The substance of the material which appeared on the billboards were calling attention to the wasteful operations in the Panhandle oil and gas field and stripping operations in particular, all with the object of fostering the purposes of the Association.

The Association also sponsored legislative tours to the Panhandle field. The activities of the Association in regard to such tours were to assist those, members and nonmembers, that were interested in showing the members of [fol. 533] the Legislature the conditions that existed in the field. These legislative tours took place in the fall of 1934. I know of no formal invitations that the Association give to members of the 44th Legislature of Texas, which was to convene in January, 1935, to come to the Panhandle for the purpose of investigating on the ground the conditions which existed in the Panhandle gas field, other than that it was generally known that we would foster this and would conduct them through the field if they came. In a great many instances we paid the expenses of the members of the Legislature from their home towns, and railroad and Pullman fares, and in some instances their hotel bills.

We conducted the members of the Texas Legislature through the Panhandle gas field and pointed out to them the practices which were taking place in the field at that time. There were many interested Amarillo citizens that generally accompanied a tour of that kind. In some in-

stances people who were employed by the gas pipe line companies operating in the Panhandle went on such tours. By that time the citizenship of Amarillo had become very much concerned about the conditions, and it was not difficult to get assistance for the tours. In some instances representatives of Texoma Natural Gas Company went on these legislative tours, as did representatives of Canadian River Gas Company. Approximately 90 out of 181 members of the 44th Legislature of Texas were conducted on tours through the Panhandle gas field by our Association.

Mr. Sneed, as President of the Association, invited the special investigating committee appointed by the national [fol. 534] Congress, known as the Cole Investigating Committee, to make a tour of inspection through the Panhandle gas field. The members of the committee were members of the Interstate Commerce Committee of the House of Representatives of Congress. This committee held its principal meetings in Dallas, Texas. Our Association did not pay the expenses of the Cole Committee from Dallas to the Panhandle. Members of the Association and other parties met this committee at Childress, Texas, and conducted them through the field, and then they embarked again on their special train at Amarillo that night. The Association paid the expense incident to their tour of inspection.

As to what the Association showed the members of the Texas Legislature and the Cole Committee on these tours, we showed them the extent of the field and then principally the stripping operations where gas was being blown into the air in enormous quantities. By that I mean we took them to the stripping plants and let them hear the roar of the gas going into the air.

As to the list of the gas companies which made contributions to the Association and the amounts of the contributions of each company, some of the funds were collected for the Association from people who joined the Association as members, and then I collected some funds as trustee for the Association, which funds were to be used by the Association in the dissemination of the information I have testified about. When I acted as trustee, the funds were donated for the campaign by various companies, oil and gas, which I was able to get to donate for this campaign, and

[fol. 535] the money was spent with the Panhandle Conservation Association. When these funds were collected, they were commingled with the regular funds of the Association and used for the purposes of the Association. The following are the names of the contributors and the amounts of their contributions which were made to me as trustee for the Association:

Membership donations	$708.50

Donations through R. D. Field, Trustee:

Cities Service Gas Company	3250.00
Texas Interstate Pipe Line Co.	500.00
Panhandle Eastern Pipe Line Co.	2750.00
Texoma Natural Gas Company	3250.00
Skelly Oil Company	3250.00
Interstate Production Company	1000.00
Lone Star Gas Company	3250.00
Texas Company	1250.00
Canadian River Gas Company	2000.00
Southwestern Development Co.	1250.00
	22,458.50

The Association spent about $22,458.50 in carrying out the object I have testified about.

About the same time that the Panhandle Conservation Association was most active, there was also an association formed in Dallas with a similar purpose. This association was named Natural Resources Committee. This association conducted activities in Dallas, Fort Worth and other large towns in Texas, State wide activities, of a nature similar to those conducted by the Panhandle Conservation [fol. 536] Association in the Panhandle. They inserted newspaper advertisements of the same character, pointing out the public evil involved in the stripping activities in the Panhandle.

I have a scrap book containing clipping of various newspaper items, editorials and the like, which have appeared in various newspapers of Texas subsequent to the organization of the Association and prior to the enactment of House Bill 266 by the 44th Legislature. I have three of such books. As to how many items of this character ap-

pear in these books, I would presume several thousand would be the answer, probably a couple of thousand. This question of what was happening in the Panhandle, its effect on the public interest, and what ought to be done about it; was a matter of general discussion in newspapers in Texas prior to the enactment of House Bill 266.

I have a clipping showing that Secretary of the Interior Ickes, in his speech to the general convention of the American Petroleum Institute in Dallas in November, 1934, made reference to the conditions which existed in the Panhandle gas field by virtue of the stripping operations and the harmful effect on public welfare from those operations. I think the principal part of his address was about the gas waste in the Panhandle. He called it "insane waste." About the same time, prior to the enactment of House Bill 266 by the 44th Legislature of Texas, an article appeared in Collier's magazine by Owen P. White with reference to the same matter. He called the attention of the public to the suicidal waste of gas in the Panhandle gas field, the general history of what brought it about, and what the [fol. 537] writer thought ought to be done about it.

Direct examination.

By Senator Small:

Q. But the net results of your activities were to acquaint the general public with the waste that was going on and the necessity for remedial legislation in the near future to prevent the complete dissipation of the resources in gas that the Panhandle had?

A. Yes, sir.

Q. And as a result of the education of your Association and also the Natural Gas Committee and the visit of the Cole Committee from Washington and the activities of Mr. Ickes, and also the activities of various citizens who were alarmed over this situation, the passage of House Bill 266 was brought about?

A. I think that is right, yes, sir.

Cross-examination.

By Mr. Morgan:

As to the question I was asked about the markets within 800 or 900 miles of this section which had not been supplied

by the gas companies, it is a fact that a contract has been signed by my company to supply gas to the City of Detroit. At the time of these activities and when stripping was at its height, there was no gas being sold in Detroit. I don't think it is closer to the Panhandle natural gas field than the terminus of our line. As to whether there is in any substantial difference, air line, it would be about the same. The difference in distance is approximately 200 miles. I know that the City of St. Louis is supplied with natural [fol. 538] gas from the Louisiana field. As to whether they are complaining that their pipe line doesn't meet their requirements, I know of their activities to obtain additional gas or gas from other lines. It is correct that there are a great many places where gas is not being generally used by the population. In some instances they are near chief coal supplies, and those particular cities are not heavy users of natural gas.

The stripping of gas first started in the Panhandle under permits of the Railroad Commission. As to whether it was January, 1933, when they commenced to issue those permits, I don't know the date. It was some time prior to the passage of the sour gas law. The stripping of gas on a large scale started prior to the enactment of the sour gas law. The strippers were afraid the Commission might change its mind about issuing those permits and that was why they wanted a law.

It is a fact that large areas of Sneed's lands are under lease to Shamrock Oil & Gas Company, one of the principal strippers of gas in this field, and other of his lands are leased to Phillips Petroleum Company, another large stripper of gas in this field. I don't know of any other strippers to whom Mr. Sneed's lands are under lease. Mr. Sneed, as a royalty owner, has lands leased to both gas pipe lines and so-called strippers, but no stripping operations are taking place on his lands that I know of. At the time this Association was formed, the strippers were taking gas from the extreme east side on limited leases.

[fol. 539] This block of advertisements which I have passed in as Exhibit No. 2 to my testimony was run principally in the Amarillo News, the Pampa Daily News and the Borger Herald. On one or two occasions certain of the ads were run in the newspapers of Childress, Wheeler, Perryton, Shamrock and Dalhart, Texas.

As to whether or not our Conservation Association sponsored the ratable production provisions of House Bill 266, they didn't sponsor any particular program. As to whether I know that some members of the Association were opposing the insertion of those provisions to the fullest extent of their ability, I know that various companies had different interests, different ideas about the correct legislation. I know of no particular pipe line company that was opposed to the general principle of ratable production on a basis that seemed to them fair. I heard a representative of Texoma Natural Gas Company make a two and a half hour argument before the House Committee on Oil and Gas. At that time the position you took was that the gas pipe line companies should not be required to buy gas as a price for stopping the waste of gas in the Panhandle. As to whether or not that was the position you took at all times down there in the Legislature, I couldn't answer that question. As to whether I ever heard you take any other position than that it was unjust and illegal, I think I always heard you say that it was illegal. My activities were such that I was principally concerned with the desires of my company at Austin, and I was not particularly interested in the detailed position of any one company.

[fol. 540] Redirect examination.

By Mr. Cheek:

It is approximately 900 miles from Amarillo to Detroit. I know the Panhandle Eastern Pipe Line Company is contemplating the construction of 230 additional miles from some point near the end of their system to serve the City of Detroit.

I was in Austin throughout the session of the 44th Legislature up until the time that House Bill 266 was passed and signed. I was present at or had knowledge of the hearings had by the Oil and Gas Committee of the House of Representatives and the State Affairs Committee of the Senate in connection with proposed gas legislation. It is a fact that the House Committee held hearings at nights for several weeks, allowing all interested persons in the gas controversy to appear and present their views. The hearings covered a long period. Pipe Line companies, carbon black companies and strippers appeared before a com-

mittee. Similar hearings were held by the committee which had jurisdiction of this legislation in the Senate, and the same sort of opportunity was offered and taken advantage of to present these different views to the Senate Committee prior to the enactment of legislation. The committees which had jurisdiction of this matter had more and longer hearings in connection with what ought to be done about the matter than any type of legislation before the Legislature by far.

[fol. 541] J. G. DICKINSON, witness for defendants (Deposition).

Direct examination.

By Mr. Cheek:

My name is J. G. Dickinson. I am Superintendent of Production of Texoma Natural Gas Company. The Texoma Natural Gas Company is an affiliated company to the Natural Gas Pipe Line Company of America. The Texoma Natural Gas Company is engaged in the production and transportation of gas to Gray, Oklahoma. Natural Gas Pipe Line Company of America transports and sells gas from the Texas Panhandle in Chicago and vicinity.

As to the cost of constructing a pipe line, I think that $1,000.00 per inch per mile is a high estimate, although I don't recall the exact figures. I believe that it would probably be $800.00 per inch per mile. The size of the line which Texoma Natural Gas Company runs from the Panhandle field to Gray, Oklahoma, is 24 inches, as is the size of the line which the Natural Gas Pipe Line Company of America operates from Gray, Oklahoma, to Joliet, Illinois.

Texoma Natural Gas Company was organized in 1930. The stockholders at the time of its organization were Southwestern Development Company, Sinclair Prairie owns 51% of its stock; Natural Gas Investment Company; Cities Service Company; The Texas Company; Columbian Carbon Company; Phillips Petroleum Company; Skelly Oil Company. Phillips Petroleum Company and Skelly Oil Company are not now stockholders.

Some of the companies which participated as stockholders in the organization of Texoma Natural Gas Company [fol. 542] prior to the date of incorporation of Texoma,

owned producing gas lands and gas wells in the Panhandle field. Subsequent to the incorporation of Texoma, certain of those stockholders transferred to Texoma Natural Gas Company the producing lands and wells which they owned in the Panhandle field. These leases and wells form the nucleus of the original acreage and wells owned by Texoma. Sixty-nine wells were transferred to Texoma Natural Gas Company. The date they were formally transferred was August 1, 1931.

I have compiled a statement showing the name and description of the wells transferred from the stockholders and other sources on August 1, 1931, the location of those wells and the rock pressure as near around the date of transfer as our records show it. This tabulation is as follows, being Exhibit No. 1:

EXHIBIT No. 1

Wells Acquired by Texoma Natural Gas Company at Time of Organization and Rock Pressures of Nearest Date

NOTE.—In some cases no tests for rock pressure were made near the time of acquirement, working pressures being taken instead. These are noted with the symbol (W.P.)

Well Name and No.	Location	Rock Press	Date of Rock Press
N. A. Cobb 1–T	SE/4 Sec. 202 Blk. 3, I&GN	367	Feb., '32
C. R. Garner "A" 2–T	SE/4 Sec. 96, Blk. 4, I&GN	360	Nov., '31
C. Kalka 1–T	NW/4 Sec. 43, Blk. 4, I&GN	356 (W.P.)	Nov., '31
J. C. McConnell "B" 1–T	NW/4 Sec. 185, Blk. 3, I&GN	334 (W.P.)	Nov., '31
R. S. McConnell 1–T	NE/4 Sec. 46, Blk. 4, I&GN	352 (W.P.)	Nov., '31
[fol. 543]			
C. A. Noel 1–T	NW/4 Sec. 26, Blk. 4, I&GN	406	Nov., '31
J. G. Bednorz 1–T	SW/4 Sec. 2, Blk. 4, I&GN	417	July, '31
J. J. Crutchfield 1–T	SE/4 Sec. 29, Blk. 4, I&GN	419	Aug., '31
H. Schafer 1–T	SW/4 Sec. 68, Blk. 4, I&GN	336 W.P.)	Nov., '31
H. M. Barrett 1–T	SE/4 Sec. 131, Blk. 3, I&GN	306 (W.P.)	Nov., '31
McLarty-Lester "B" 3–T	NE Sec. 10, Blk. 1, ACH&B	337	Feb., '32
E. M. Osborne 1–T	SE Sec. 108, Blk. 3, I&GN	315 (W.P.)	Nov., '31
G. H. Saunders 2–T	SE Cor. 3, H&GN	320	June, '31
G. H. Saunders 3–T	NW. Sec. 3, B&B	273	Feb., '32
G. H. Saunders 6–T	SE Sec. 4, Blk. 1, ACH&B	270	Feb., '32

EXHIBIT No. 1—Continued

Wells Acquired by Texoma Natural Gas Company at Time of Organization and Rock Pressures of Nearest Date

NOTE.—In some cases no tests for rock pressure were made near the time of acquirement, working pressures being taken instead. These are noted with the symbol (W.P.)

Well Name and No.	Location	Rock Press	Date of Rock Press
G. H. Saunders 10–T	W/2 Sec. 1, J. G. Eustis	260	Feb., '32
G. H. Saunders 12–T	SE/4 Sec. 1, J. G. Eustis	269	Feb., '32
G. H. Saunders 13–T	SE/4 Sec. 1, J. G. Eustis	277	Feb., '32
G. H. Saunders 15-T	SE/4 Sec. 4, Blk. 1, ACH&B	271	Feb., '32
G. H. Saunders 17–T	SE/4 Sec. 3, Blk. 1, ACH&B	273	Feb., '32
G. H. Saunders 18–T	SE/4 Sec. 3, Blk. 1, ACH&B	277	Feb., '32
M. A. Shaw 1–T	SW SE Sec. 5, Blk. 1, ACH&B	292	Feb., '32
Henry Thut 1–T	NE/4 Sec. 1, H&GN	326	Feb., '32
Bruce Bull 2–T	NW Sec. 2, Blk. B–2, H&GN	258	Feb., '32
McLarty-Lester "B" 1–T	SE/4 Sec. 2, B&S	327	Feb., '32

[fol. 544]

J. D. Cuddeback 1–T	SE Cor. Sec. 19, Blk. 24, H&GN	333	Dec., '31
G. C. Gordon 1–T	SE NW Sec. 91, Blk. 17, H&GN	328	Dec., '31
G. C. Gordon 2–T	SW NW Sec. 91, Blk. 17, H&GN	331	Dec., '31
Chas. Hicks 1–T	NE SW Sec. 53, Blk. 17, H&GN	407	Dec., '31
D. L. Morgan 1–T	SE NW Sec. 93, Blk. 17, H&GN	327	Dec., '31
D. L. Morgan 2–T	NW NW Sec. 93, Blk. 17, H&GN	326	Dec., '31
B. P. Sewell 1–T	SE NW Sec. 1, Blk. 24, H&GN	330	Dec., '31
B. P. Sewell 2–T	NE NW Sec. 1, Blk. 24, H&GN	328	Dec., '31
D. C. Jester 1–T	SW Sec. 14, Blk. 6–T, T&NO	425	June, '31
W. D. Jorden et al 1–E	Cen SE Sec. 94, Blk. 4	354	Sept., '31
J. C. McConnell 1–E	SE SW Sec. 66, Blk. 4	364	June, '31
J. S. Bell "B" 1–E	E/2 SW Sec. 111, Blk. 3, I&GN	352	Sept., '31
J. W. Cantrell 1–E	SE Cor. Sec. 136, Blk. 3, I&GN	360	Sept., '31
A. Frashier 1–E	Cen SE Sec. 177, Blk. 3	373	Sept., '31
S. McCullough 1–E	SW SW Sec. 153, Blk. 3	370	July, '31
H. B. Ruscoe 1–E	W/2 SE Sec. 111, Blk. 3	350	Oct., '31
Mary Wall 1–E	SW/4 Sec. 161, Blk. 3	350	Oct., '31

EXHIBIT No. 1—Continued

Wells Acquired by Texoma Natural Gas Company at Time of Organization and Rock Pressures of Nearest Date

NOTE.—In some cases no tests for rock pressure were made near the time of acquirement, working pressures being taken instead. These are noted with the symbol (W.P.)

Well Name and No.	Location	Rock Press	Date of Rock Press
Mrs. L. B. Beauchamp 1–E	NW/4 Sec. 112, Blk. 44, H&TC	428	July, '31
S. B. Burnett 1–G	SW/4 Sec. 118, Blk. 5, I&GN	328	Feb., '32
[fol. 545]			
S. B. Burnett 11–G	NW/4 Sec. 106, Blk. 5	330	June, '31
S. B. Burnett 19–G	SW NW Sec. 106, Blk. 5	325	Feb., '32
S. B. Burnett Est. 1–G	NW/4 Sec. 91, Blk. 5	365	Feb., '32
S. B. Burnett Est. "B" 1–G	SW/4 Sec. 21 Blk. 5	422	Dec., '31
S. B. Burnett Est. "C" 1–G	SE/4 Sec. 35, Blk. 4	423	Feb., '32
S. B. Burnett D–1–G	NW Sec. 34, Blk. 5	423	Dec., '31
W. E. Cobb 1–G	NE Sec. 202, Blk. 3, I&GN	423	Dec., '31
H. M. Barrett 1–G	NE/4 Sec. 131, Blk. 3, I&GN	370	Feb., '31
E. B. Johnson "A" 1–G	SE/4 Sec. 1, Blk. Y–2 TTRR	392	Dec., '31
J. M. Sanford "B" 1–G	NW Sec. 2, Blk. XO–3	281	April, '31
K. Reimer et al 1–G	S/2 Sec. 29, Blk. 47, H&TC	332 (W.P.)	Dec., '31
J. M. Sanford "A" 1–G	N/2 Sec. 82, Blk. 46, H&TC	252	Dec., '31
J. M. Sanford 2–G	NE/4 Sec. 81, Blk. 46, H&TC	257 (W.P.)	Dec., '31
J. M. Sanford 1–G	N/2 Sec. 75, Blk. 46, H&TC	245 (W.P.)	Dec., '31
C. L. Killgore 1–G	SW/4 Sec. 22, Blk. PMc, EL&RR	424	Dec., '31
C. L. Killgore 2–G	SE/4 Sec. 29, Blk. PMc, EL&RR	427	Dec., '31
B Dore 1–G	SE/4 Sec. 312, Blk. 44, H&TC	422	Feb., '31
E. B. (Cart) Johnson 1–P	NE/4 Sec. 1, Blk. Y–2, TTRR	335 (W.P.)	Dec., '31
W. H. Taylor 1–P	E/2 NW Sec. 244, Blk. 3–T, T&NO	428	Feb., '31
[fol. 546]			
J. T. Sneed 1–P	NE/4 Napoleon Jones Survey	408	Feb., '31
Ackley 1	NW/4 Sec. 20, Blk. 24, H&GN	310	Dec., '31
P. C. Ledrick 1–S	NW/4 Sec. 239, Blk. B–2, H&GN	408	Feb., '31
C. W. Bradford 1–S	NE/4 Sec. 118, Blk. B–2, H&GN	298	Nov., '31
M. C. Burnett 1–T	NE Sec. 90, Blk. 5, I&GN	359	Feb., '32
M. C. Burnett 5–T	NW Sec. 89, Blk. 5, I&GN	366	Jan., '32

I was a director of the Panhandle Conservation Association and participated in its activities. My principal interest in the activities of the Association were occasioned by my employment with Texoma, although I was interested as a citizen of Amarillo. The Texoma Natural Gas Company was a member of the Panhandle Conservation Association, and I as a director had a part in influencing the policies and activities of that Association.

I remember the occasion of the filing of suits in the spring of 1934 by certain individuals, Mr. Sneed, Mr. Britain and Mr. Schafer, against Phillips Petroleum Company, Skelly Oil Company, Hagy, Harrington & Marsh, Cargray Corporation, Shamrock Oil & Gas Company, Continental Oil Company and Smith Brothers, in which suits the complainants asserted the invalidity of the so-called sour gas law. The defendants in those suits were claiming to operate under the terms of the so-called sour gas law, or Article 6008 as it then was, and were at that time engaged in stripping operations whereby they extracted the gasoline con- [fol. 547] tent from the natural gas and blew the residue into the air.

Q. Did the Texoma Natural Gas Company, directly or indirectly, assist in financing the prosecution of those suits?

A. I don't know, do you Judge?

Mr. Morgan: They did. The contribution came through the Legal Department. They helped to pay my fee. In that connection I will say they didn't help to pay Mr. Schafer's attorney's fee. He paid it himself. They helped to pay Morgan, Culton, Morgan & Britain.

The Texoma Natural Gas Company maintained representatives at the 44th Legislature, Regular Session, incident to the proposed gas legislation.

Q. Texoma Natural Gas Company presented to the Legislature its views with reference to the public harm resulting from the existence of the legislation which authorized stripping operations?

A. Yes.

Q. Was the Texoma Natural Gas Company also concerned about the harm that was resulting and would result to its reserves by virtue of those operations?

A. Yes.

Q. And did it think that if those operations were con-

tinued indefinitely those reserves would be greatly endangered and probably lost?

A. That they would be seriously damaged.

Q. And to prevent that damage and to protect the public interest in connection with the production of gas and the preservation of gas reserves, you advocated repeal of the [fol. 548] law which would authorize stripping operations?

A. Yes.

Texoma Natural Gas Company has never purchased or offered to purchase gas from the wells of the so-called independent producers in the Panhandle gas field. What gas we produce we produce from our own wells. Texoma Natural Gas Company has exercised the right of eminent domain in the State of Texas in one instance.

I remember a meeting of a number of individuals representing various gas companies and pipe line companies operating in the Panhandle, which was held in Dallas in September, 1934. That meeting was held at the offices of Dallas Gas Company, which is a subsidiary of the Lone Star Gas Company. The following individuals were present at that meeting: L. C. Fisher, Chicago, President of Northern Natural Gas Company; N. K. Moody, Tulsa, President of Canadian River Gas Company; Logan W. Cary, Oklahoma City, President of Consolidated Gas Company; B. R. Bay, Kansas City, Vice President of Panhandle Eastern Pipe Line Company; J. D. Creveling, New York, representing Henry L. Doherty Company; N. C. McGowen, Houston, President of the United Gas Service Company; H. R. Straight, Bartlesville, Oklahoma, Vice President of Cities Service Company; Floyd C. Brown, Chicago, Vice President of Natural Gas Pipe Line Company of America; J. G. Dickinson, Superintendent of Production of Texoma Natural Gas Company; R. E. Wertz, Amarillo, Vice President of Canadian River Gas Company; C. J. Fowlston, [fol. 549] Amarillo, North American Light & Power Company; L. B. Denning, Dallas, President, Lone Star Gas Company; Frank L. Chase, Dallas, Vice President of Lone Star Gas Company.

The purpose of that meeting was to discuss conditions of waste then existing in the Panhandle field. The persons who participated were concerned about those conditions. The meeting agreed that each company individually would lend its support to an effort to bring about conservation

in the field, but the extent of their participation would be determined by themselves. They all agreed that the continuance of the practices which existed at that time, where gas was being stripped and popped into the air, was not in accordance with conservation. As to whether they agreed to oppose the continuance of that policy, I don't know that there was any definite agreement. There was a general understanding that everybody deplored the conditions which existed, and the general sentiment seemed to be opposed to its continuance. As I recall, there was no vote taken about anything. There was just a general discussion.

Cross-examination.

By Mr. Morgan:

The extent to which any company would participate in an effort to stop this condition was checked back to each company. As to whether there was any formal program of resistance agreed on or worked out, a good many of the participants in the matter vigorously resisted any effort to act as a group, Mr. McGowen in particular.

[fol. 550] You were our representative at Austin before the Legislature. As to what the Texoma told you to do about agreeing to a bill that would have incorporated in it a provision that would force Texoma to divide its markets with other people, we advised you to work for the conservation of gas and to restrict your activities entirely to that endeavor, and we gave you no instructions which could be interpreted as permitting you to make any agreement for Texoma in the connection which you state. You were instructed by the management, through me, that you were absolutely without authority to commit Texoma to divide its markets with anybody in that legislative work down there.

Redirect examination.

By Senator Small:

As to whether I saw House Bill 266 as it was finally drafted before it was passed, no, I wasn't there. As to whether I know anything about the discussion which took place with the various members of the Legislature by our representatives and others, I attended a committee

hearing before the Oil and Gas Committee in the House, but I was not in Austin at the time the bill was finally up for consideration. As to when this bill was finally up for consideration, I know of any representative of Texoma Natural Gas Company that raised any protest to the bill as it was finally passed, my understanding is that Judge Morgan protested the bill. I was not there and did not hear him protest it.

[fol. 551] Mr. Cheek: We offer a certified copy of House Bill 151 that was introduced before the Forty-fourth Legislature.

DEFENDANTS' EXHIBIT No. 75

Be it Enacted by the Legislature of the State of Texas:

That Article 6008 of the Revised Civil Statutes, 1925, as amended by Section 2, Chapter 26, Acts 42nd Legislature, First Called Session, Section 1, Chapter 100, Acts 43rd Legislature, Regular Session, and Chapter 88, Section 1, Acts First Called Session, 43rd Legislature, is hereby amended so that same shall hereafter read as follows:

Section 1. For the purpose of this Act, a gas well is any well (a) which produces natural gas only, or (b) which produces more than 200,000 cubic feet of natural gas, calculated at an assumed atmospheric pressure of 16.4 pounds absolute per square inch and a temperature of 60 degrees Fahrenheit, to each barrel of oil from the same producing horizon, or (c) which produces natural gas, through a bradenhead or otherwise, from a formation or producing horizon productive of gas only encountered in a well bore through which oil also is produced; provided that for the purposes of this Act, if oil and/or gas be produced through different strings of casing set in the same well bore, the inner string of casing through which oil and/or gas be produced shall be regarded as one well, and each successive additional string of casing through which oil and/or gas shall be produced, through a bradenhead or otherwise, from a different producing horizon than others producing through the same well bore, shall be regarded as another well.

Section 2. For the purposes of this Act, an oil well is any well which produced one barrel of oil or more to each 200,000 cubic feet of natural gas, calculated as stated in Section 1 of this act.

Section 3. For the purposes of this Act, sour gas is any natural gas containing 12 grains or more of hydrogen [fol. 552] sulphide, or any other sulphurous compound, per thousand cubic feet of gas, calculated as stated in Section 1 of this Act; and sweet gas is any natural gas containing less than 12 grains of hydrogen sulphide, or any other sulphurous compound, per thousand cubic feet of gas, calculated as stated in Section 1 of the Act.

Section 4. No person, firm or corporation in possession as owner, lessee, agent, trustee, receiver, or manager of any oil well, as heretofore defined in this Act, shall produce from such well natural gas found in a horizon productive of natural gas only.

Section 5. Any person, firm or corporation in possession as owner, lessee, agent, trustee, receiver, or manager of any gas well, as heretofore defined in this Act, shall, within ten days after encountering gas in such wells, confine the gas in such well until such gas can be utilized for one or more of the purposes hereinafter set forth.

Section 6. After the expiration of ten days from the time of encountering gas in a gas well, no gas from such well shall be permitted to escape into the air; and no sweet gas therefrom shall be utilized except for (a) light or fuel; or (b) efficient chemical manufacturing purposes, other than the manufacture of carbon black; or (c) the bona fide use as gas lift in the production of oil; or (d) the bona fide introduction of gas into oil, or gas bearing horizon in order to maintain or increase the rock pressure or otherwise increase the ultimate recovery of oil or gas from such horizon; or (e) the extraction of natural gasoline therefrom when the residue is returned to the horizon from which it was produced; and no sour gas therefrom shall be utilized except for (a) light or fuel; (b) efficient chemical manufacturing purposes; or (c) the bona fide use as gas lift in the production of oil; or (d) the bona fide introduction of gas into an oil or gas bearing horizon in order to maintain or increase the rock pressure or otherwise increase the ulti-

mate recovery of oil or gas from such horizon; or (e) the extraction of natural gasoline therefrom when the residue is returned to the horizon from which it was produced or when such residue is used for the manufacture of carbon black in a plant or plants at an operating or producing efficiency of not less than one pound of carbon black to each thousand cubic feet of natural gas, calculated as heretofore stated in this Act.

[fol. 553] Section 7. No person, firm or corporation in possession as owner, lessee, agent, trustee, receiver or manager of any gas well, as heretofore defined in this Act, shall produce from such well at a rate in excess of 25 per cent of the natural open flow of gas from such well for any of the purposes and uses authorized under the terms of this Act; providing, that the rate of production from any given well shall be determined by arriving at the average daily rate of production for the calendar or fiscal month.

Section 8. It shall be the duty of all persons, companies, or corporations producing natural gas, to ascertain and determine on or prior to the first day of April and October, respectively, of each year hereafter, through appropriate tests, and under uniform and generally recognized methods, and under regulations which shall be prescribed by the Commission, open flow and rock pressure of each gas well from which natural gas shall be produced, and verified reports thereof shall be filed with the Commission on or before the 10th day of each of the months aforesaid; which said reports shall be kept on file with the Commission and shall become a permanent public record and shall be open to the inspection and examination of the public.

Section 9. The conserving of natural gas is hereby declared to be a part of the conservation policy of the State of Texas, and the blowing or allowing the escape into the air of natural gas from a gas well, whether such gas be burned as it escapes or not, or permitting such to be done, or otherwise using or permitting the use of gas contrary to the provisions of this Act, is declared to be waste and is hereby prohibited.

Section 10. Any person violating the provisions of this Article shall be liable to a penalty of $500.00 for each offense, and each day's violation shall be a separate offense.

Such penalty may be recovered with the cost of suit in a civil action instituted by the Attorney General or by the County of District Attorney, or by any person having an interest in the pool or reservoir where such violation may occur; and any and all violations or threatened violations of this Act may be enjoined by any court of competent jurisdiction in a suit by any such parties.

[fol. 554] Section 11. All laws or parts of law in conflict with any of the provisions of this Act are hereby expressly repealed.

Section 12. If any of the sections, clauses, or any of the provisions of this Act shall be held to be unconstitutional, or otherwise invalid or unenforceable, such holding shall not have the effect of nullifying or in anywise affecting the remainder of this Act; and the parts of this Act not so held to be unconstitutional or invalid shall remain in full force and effect.

Section 13. The fact that Section 1 of Chapter 88 of the Acts of the First Called Session of the 43rd Legislature permitting the use and waste of gas contrary to the provisions of this Act, has given rise to an unwarranted, unprecedented, reckless and devastating wastage of natural gas and underground wastage of oil, and has tended to destroy the conservation policy of the State of Texas by permitting billions of cubic feet of gas to escape and be blown into the air each day, and millions of barrels of oil to become unrecoverable, to the great present and future detriment of the natural gas and oil producers and consumers of the State and the owners of land under which are located the reservoirs of natural gas and oil, has created an emergency and an imperative public necessity demand the suspension of the constitutional rule requiring bills to be read on three separate days in each House, and said rule is hereby suspended and this Act shall take effect from and after its passage, and it is so enacted.

—. B. No. 151. By Graves, et al.

Mr. Cheek: We offer likewise a similar bill introduced in the Senate.

(The instrument was then marked "Defendants' Exhibit No. 76".)

DEFENDANTS' EXHIBIT 76

S. B. No. 464. By Woodruff.

A Bill to be Entitled

"An Act amending Article 6016 of the 1925 revised Civil Statutes requiring that all natural gas when encountered in any well in this State, producing natural gas only, be confined to its original horizon until same can be produced and utilized without waste for some useful and lawful purpose, and requiring the protection of such horizon from infiltrating waters; prohibiting any person, firm, corporation, in possession as owner, lessee, agent, trustee, receiver, [fol. 555] or manager, of any well producing natural gas only, or any person, firm, copartnership, corporation, agent, trustee or receiver, receiving, purchasing, or processing natural gas from any such well from wasting such gas into the air in its natural state or as residue gas from a natural gasoline plant or otherwise, whether such gas be burned as it escapes or not; and fixing a penalty for the violation thereof and providing means for the recovery of such penalty; repealing all laws or parts of laws in conflict and providing that if any portion of the Act be declared unconstitutional the remaining portions thereof shall nevertheless be valid; and declaring an emergency.

Be it enacted by the Legislature of the State of Texas:

That Article 6016 of the Revised Civil Statutes of Texas, 1925, be amended so as hereafter to read as follows:

Section 1. Whenever natural gas shall be encountered in any well in this state, producing natural gas only, such gas shall be confined to its original horizon until the same can be produced and utilized without waste for some useful and lawful purpose, and all gas-producing horizons shall be adequately protected from infiltrating waters; provided, that under no circumstances shall any person, firm or corporation in possession as owner, lessee, agent, trustee, receiver, or manager of any well producing natural gas only, or any person, firm, copartnership, corporation, agent, trustee or receiver receiving, purchasing or processing natural gas from any such well, permit any such gas to be wasted into the air in its natural state, or as residue gas from a nat-

ural gasoline plant, or otherwise, whether such gas be burned as it escapes or not.

Section 2. Any person violating any of the provisions of this article shall be liable to a penalty of Five Hundred ($500.00) Dollars for each day such offense is committed, and each day any such violation continues, shall be a separate and distinct offense for which the party in violation shall be held liable for the penalty herein prescribed; such penalty to be recovered with the costs of suit in a civil action instituted by the Attorney General, or by the County [fol. 556] or District Attorney, or by any party having an interest in the pool or reservoir where such violation may occur, and any and all violations or threatened violations of this Act may be enjoined in any court of competent jurisdiction by any such parties.

Section 3. All laws, or parts of laws, in conflict with the provisions of this Act are hereby expressly repealed.

Section 4. If any of the sections or clauses or any of the provisions of this Act shall be held unconstitutional or otherwise invalid or unenforceable, such holding shall not have the effect of nullifying or in anywise affecting the remainder of this act and the parts of this Act not so held to be unconstitutional or invalid shall remain in full force and effect.

Section 5. The fact that under the present laws an unprecedented, reckless and devastating wastage of natural gas and resultant underground wastage of crude oil exists in the State of Texas whereby millions of feet of natural gas are being wasted daily, and millions of barrels of oil will be rendered unrecoverable as a result of such wastage, creates an emergency and imperative public necessity demanding the suspension of the constitutional rule requiring bills to be read on three separate days in each House, and said rule is hereby suspended and this Act shall take effect from and after its passage. And it is so enacted.

S. B. No. 464. By Woodruff.

Mr. Cheek: We offer the report of the investigating committee of the Senate appointed by the Forty-third Legisla-

ture of the Panhandle gas situation and what remedy they recommended to the Senate of Texas.

The instrument was then marked "Defendants' Exhibit No. 77", and is as follows:

DEFENDANTS' EXHIBIT 77

Preliminary Report of the Senate Investigating Committee of the Third Called Session of the Forty-Third Legislature

Austin, Texas, September 9, 1934.

To the Legislature of the State of Texas:

We, your committee authorized under Senate Simple Resolution No. 30, adopted February 27, 1934, as amending [fol. 557] Senate Simple Resolution No. 120, Acts of the Regular Session of the Forty-Third Legislature, for the purpose of looking into and determining the loss, theft, waste and dissipation of oil and gas in Texas for the purpose of determining appropriate legislation to correct same.

Beg to make this preliminary report to the Forty-Third Legislature. Your Committee held hearings in the City of Amarillo, Texas, April 9, 10, 11, and 12, 1934. This meeting was well advertised and was largely attended by many witnesses from all angles of the controversy, including farmers, big land owners, gas and oil well owners, and representatives of pipe lines, processing plants, and carbon black plants, all of whom were given an opportunity to testify. A copy of this testimony is herewith attached. The members of your committee visited the field and made a personal inspection of the production method and uses to which natural gas is being put. We submit the following brief of said testimony for your consideration.

We find it is the world's largest known gas field and is one common reservoir or pool. It extends from the southeast portion of Wheeler County through Gray, Carson, Hutchinson, Potter, Hartley and Moore Counties. It is about one hundred and twenty-five miles in length and varies in width from five to forty miles. The productive area embraces at least 1,350,000 acres of land, of which 982,324 acres are capable of producing sweet gas and the

other land is capable of producing sour gas, that is, gas containing hydrogen sulphide. We find there are:

Natural gas wells	750
Bradenhead wells	50
Plugged back and depleted wells	135
	935
Oil wells connected with plants	1217
Oil wells not connected	668
Total number of producing wells	1885
Total number of wells	2820

[fol. 558] The greater majority of oil wells are producing vast quantities of natural gas.

Daily open flow capacity of all gas wells: 17,600,000,000 cubic feet. Daily potential oil production, 165,574 barrels. Depth of wells, 2,000 to 3,000 feet, at an average cost of $12,000.00 per well. The record shows:

Gasoline Extraction Plants

Number of plants	40
Estimated daily capacity, cubic feet	1,810,000,000
Number of gas wells connected to plants	338
Number of oil wells connected to plants	1,217

Gas content varies from .246 to .34, or about one gallon of gasoline to each 3,000 cubic feet of gas. Price of gasoline at time of hearing was about 1½¢ per gallon. The income to the land owners from gas stripped of its gasoline content and the- blown into the air was one-eighth of from ten to twenty-five per cent of the value of the natural gasoline.

We find that there are nineteen gas pipe lines transporting gas from this field to Colorado, Nebraska, Iowa, Illinois, Missouri, and elsewhere. Some of said pipe lines do not strip the gas of its gasoline content at or near its production, and we have been informed that the transporting of gas heavily laden with gasoline content is dangerous. Evidence indicates that pipe line companies own eighty per cent of the gas bearing acreage in this field.

The Railroad Commission reports show that approximately one billion seven hundred million feet of gas are

now being produced daily. Pipe lines take four hundred million feet; carbon black plants probably four hundred and fifty million feet, and estimating gas used for fuels, it means nearly a billion feet is blown into the air each day.

[fol. 559] According to the records of the commission for the month of February, 1934, 569,201,000 cubic feet of sweet gas and 724,437,000 cubic feet of sour gas was run to stripping plants daily. Some plants stripped sweet gas exclusively.

Carbon Black Plants

Number in the field	25
Estimated daily capacity, cubic feet	592,000,000
Daily consumption, cubic feet	443,483,000

The income from gas used for carbon black was one-eighth of one cent additional to that which was stripped and then blown in the air.

We find many thousands of people employed in carbon black industries. We find from the record that the value to the land owner per section of land when the gas is stripped varies from an estimated minimum of $1,184.00 to an estimated maximum of $2,860.00; depending upon the producer's contract with the stripping plant. We find further that the value to the land owner per section when used for heat and light purposes is from $24,000.00 minimum to approximately $48,000.00 maximum, depending upon the variations of prices paid by the pipe line companies to the producers. The latter figures are based upon the estimated footage of gas in place, this being fifteen million cubic feet per acre and does not take into consideration the time element in producing the gas. It should be noted that the value for stripping purposes should be realized only, over not to exceed five years, whereas the value for light and fuel purposes would be spread over an estimated period of 75 years.

The state received in taxes during the year 1932, ending September 30th:

From casinghead plants	$35,603.49
From natural gas	115,669.29

For the year ending September 30, 1933, the State received:

From casinghead plants	$31,771.00
From natural gas	156,002.34

It is estimated that the field originally contained twenty trillion cubic feet of gas, and that four trillion cubic feet [fol. 560] have been withdrawn since its discovery in 1918. The original rock pressure of the field was 430 lbs. and the rock pressure the date of the hearing was 380 lbs., and in some areas it was found to be as low as 200 lbs.

The average price paid by stripping plants for gas that prevailed during the year 1933 was .292, and during the year 1932 the average price as .225, and the average price for gas used in stripping plants computed by the Comptroller was .001076 per thousand cubic feet on which taxes were paid for 1933. A minimum price per 1000 cubic feet for gas for fuel and lighting purposes was two cents. At the rate of a billion cubic feet blown into the air daily, with the State realizing no revenues thereon, the field will become exhausted in approximately five years. On the other hand, if the reservoir is protected for future fuel and lighting purposes, the State should collect revenues from taxes at the present gross production rate in the sum of $380.00 per day. This potential revenue would be realized over the estimated period of 75 years for the life of the field for fuel and lighting purposes, the ultimate revenue recovery being based of course, upon the continued use of natural gas for such purposes. If the billion cubic feet of gas blown into the air was made into carbon black, it would produce 66,000 pounds of carbon black at a minimum price of four cents per pound, or $2640.00 worth of carbon black, meaning a loss in taxable values to the municipalities, counties and State of $2,640.00 worth of real property.

The probable life of gas reserve of this area, if production is not limited to light and fuel, will be in direct proportion to amount of withdrawal to sixteen trillion feet estimated to be in the reservoir at this time.

[fol. 561] Recommendations

We recommend that appropriate legislation be passed to prevent waste in the production of gas:

(1) That pipe line companies, casinghead plants and carbon black plants should be required to take ratably a sufficient amount of gas to meet the legitimate demands, and that all persons producing gas and oil should make correct reports to the Railroad Commission and to the Comptroller

and that all parties in this field be restricted to a ratable production of gas irrespective of waste and that the land owners should receive just compensation for the gas taken from under their lands.

(2) That a tax of one-half cent per thousand cubic feet be placed on the production of natural gas in Texas.

(3) That all taxes paid to the State for the production of natural gas be refunded on such gas as is repressured into the same horizon from whence it came.

(4) We recommend the passage of legislation to equitably allocate the market for gas used for light and fuel among the several owners of a common pool, and when a ratable market on a fair basis and at a reasonable price is provided, the use of gas then be restricted to light and fuel usage, as Article 6008, Revised Statutes, originally provided.

(5) In areas productive of gas containing a high content of hydrogen sulphide or other substance rendering it unfit for light and fuel usage, and where the cost of treating such gas for the removal of its objectionable contents is prohibitive, it is recommended special permits be granted to allow the use of such gas for the manufacture of carbon black or other similar uses, and under no circumstances that the residue gas be blown into the air.

(6) That the issuance of further carbon black permits, and the renewal of existing permits be contingent upon the requirement that carbon black plants take their gas requirements ratably from all such gas as is available for this usage.

[fol. 562] (7) That legislation be passed restricting the amount of gas produced with oil and we think that the ratio of gas produced with oil should be materially decreased and believe that an efficient gas-oil ratio should be determined and enforced in the Panhandle field, and in all other fields as well. We think that gas necessarily produced in the efficient operation of an oil well should be first stripped of its gasoline content, then used in the manufacture of carbon black, or used for light and fuel. Of course, exceptions would have to be made where there are no carbon black plants accessible, and no industrial use is available.

(8) We recommend that there be levied and collected a tax of 2 cents per thousand cubic feet upon all gas produced and sold at the well at a price less than 4 cents per thousand cubic feet.

(9) We recommend legislation requiring all natural gas produced in Texas to be stripped of its gasoline content before moving more than twenty miles from point of origin in pipe lines.

(10) It is further recommended that any taxes above referred to be levied as an occupation tax on the occupation of producing natural gas and not as a tax on the property itself.

In closing this report, we deplore the large wastage of gas which now exists in the Panhandle Oil and Gas field, however, the conservation of a resource naturally necessitates control and usage of the production by the body entrusted with the regulation of such resource, in order to protect the various interests involved. We think it is safe to say that the so-called waste problem in the Panhandle gas field would have been solved long before this time of the provisions of Section 4 of the Oil and Gas Conservation Law had been carried out as the Legislature intended, all of which goes to show that conservation is impossible without an equitable allocation of the market requirements.

Unless the comprehensive legislative program herein outlined can be enacted and enforced, the State cannot continue its conservation policy.

[fol. 563] Respectfully submitted, Beck, Chairman. Woodruff, Vice-Chairman. Redditt, Secretary. Martin. Poage.

Mr. Cheek: We offer a report of the Railroad Commission of Texas to that same investigating committee as to the conditions existing in that field.

An objection was made to the introduction of the report on the ground that it was self-serving.

The Presiding Judge: It is not offered as evidence of any of the matters contained in it, but merely as the report of an official body charged by law with the duty of enforcing the law with reference to oil and gas. If it is

offered for the purpose of showing that the Commission did make a report at that time of conditions for the purpose of showing if there was a matter of waste which was of great public interest, it would be admissible, but not for the purpose of proving the truth of these statements, and we are just taking it for whatever light it has subject to the objection.

The instrument was then marked Defendants' Exhibit No. 78, and is as follows:

DEFENDANTS' EXHIBIT 78

Report to Senate Investigating Committee on Texas Panhandle Gas Situation

March 23, 1934.

In order that the gentlemen of the Committee may have a full understanding of the Panhandle gas problem, we are setting forth the statistical data concerning this enormous gas field as well as a brief history of the various steps that have been taken both by the Legislature and ourselves to constructively regulate and solve this controversial problem.

[fol. 564] The proven gas productive area of the Panhandle Field embraces approximately 1,308,390 acres, of which 982,324 acres are capable of producing "sweet gas," that is, gas free from hydrogen sulphide, and 326,066 acres are productive of sour gas and oil. This field covers a part of seven counties, having a length of 115 miles and an average width of 20 miles. To realize the enormous extent of this field, we might state that it covers an area approximately 30 per cent larger than the entire state of Rhode Island and about 32 per cent smaller than the state of Delaware and is, of course, the world's largest known gas field. The field now has 727 gas wells and about 2,000 oil wells, of which the great majority are also producing large quantities of gas. The 727 gas wells alone have a total potential capacity of about nineteen billion cubic feet of gas per day. Our records indicate that the best informed engineers estimate that this reservoir originally contained close to twenty trillion cubic feet of gas, of which approximately four trillion feet have been withdrawn since the field was first discovered in 1918. A map showing the

Panhandle area is attached hereto, upon which the sweet gas area is colored in yellow and the sour gas and oil areas are colored in green.

Emanating from this field are fifteen pipelines that transport this gas throughout the middle west and as far east as Indianapolis. The major portion of the gas taken by these pipelines goes out of the State of Texas to Denver, Nebraska, Iowa, Chicago, Kansas City, and other points. The big construction period for these pipelines was the years 1930 and 1931. In the year 1932, the first complete year of operation of all lines, they transported an average daily load in excess of 266,000,000 cubic feet, and during the year 1933, their average daily load was approximately 300,000,000 cubic feet.

Located in this field are 55 gasoline plants of which 48 are in active operation. There are also 25 carbon black plants which use a portion of the residue gas from the gasoline plants. For the month of December, 1933, the total amount of gas which went to air was slightly over [fol. 565] 500,000,000 cubic feet of gas per day. During the year 1932, which was prior to the enactment of the so-called Sour Gas Bill, there was slightly over 300,000,000 feet of gas per day being blown to air; therefore, the actual increase in the so-called wastage of gas in this field has been increased approximately 200,000,000 cubic feet daily, which amounts to only about 12 per cent of the total withdrawals of gas from the field for all purposes.

We will now review various attempts of the State of Texas to constructively regulate and conserve this huge gas reserve. Article 6008 of the revised Civil Statutes of 1925, as amended by the First Called Session of the Forty-Second Legislature, provided in substance that any well producing gas only shall remain closed in until said gas be utilized for light or fuel; provided, however, the Commission may permit the use of such gas for any other purpose which, under circumstances surrounding each particular case, might be found by the Commission, after hearings, to be practical and conducive to the public welfare. The effect of this statute was to practically limit the use of gas to those large concerns operating pipelines and distributing gas to the public. In order to protect various producers of gas against any monopolistic ownership of pipelines, the Forty-Second Legislature, at its first called ses-

sion, passed what is commonly known as the "Common Purchaser Act," which provided in substance that every gas pipeline company or gas purchaser engaged in the business of transporting natural gas by pipeline should be a common purchaser thereof, and take such gas from all producers alike, under such rules or regulations as might be prescribed by the Commission, without discrimination in favor of one producer or person as against another. Four of the large pipeline companies operating in the Panhandle Field immediately attacked this statute before a three judge court and a permanent injunction against the enforcement thereof was granted on June 8, 1932. Subsequent to this case the Legislature saw fit to pass a second statute to compel the ratable production of gas in order that all operators in a common field would be allowed to produce their proportionate part of the total market outlet but this measure was also stricken down by a three judge court after being attacked by the same pipeline interests.

[fol. 566] From the summer of 1931 until the spring of 1933, there were three Federal Court cases relative to the Panhandle gas situation and the Railroad Commission held perhaps twenty hearings on the subject. The basis of the entire trouble is this. The State of Texas primarily was interested in the enforcement of its various waste statutes in order that this gas reserve might be conserved for the future use of the consuming public. While it realized that no substantial part of the gas from this field would probably ever be used in Texas and that the major portion of the economic benefits from this gas would go to eastern capital and be enjoyed by persons outside of the state, these considerations did not lessen the efforts of the Legislature and the Commission to attempt to find some solution that would restrict the use of gas to those purposes which would do the most good and at the same time accord equity to all of the producers.

The State felt that in exchange for its restricting the production of gas to those uses upon which the large pipeline companies have a virtual monopoly that they would be willing to take their gas ratably from all producers in the common pool. The Pipeline companies and their producing subsidiaries own approximately four-fifths of the acreage in the entire field and about the same proportion

of the developed gas. The pipeline interests, however, continued to produce all of their requirements from their own wells and refused to give the independent producers in the field any market whatever, which of course resulted in drainage of their properties and, if allowed to continue, would eventually result in complete confiscation of the independently owned holdings. During this period of legal controversy, the gas utilities contended, and the Federal Courts sustained them in the assertion that the State of Texas did not have sufficient police power to compel them to furnish a ratable market. It was pleaded in the three [fol. 567] Federal Court cases that unless the State was upheld in its attempt to provide a fair market for the small producers that its only resource would be to remove these restrictions which, as pointed out to the court, would inevitably cause a large amount of residue gas to be blown into the air. Nevertheless, it was the attitude of the court that this was the only relief which could be given the owners of the wells without a market.

Finally the Legislature, at its regular 1933 session, passed what is commonly known as the Sour Gas Law, which provides that the owner of a gas well, who has no reasonable market for light and fuel, may use 25 per cent of the capacity of his well for the manufacture of gasoline. Just prior to the passage of the Sour Gas Law, the Commission received a number of petitions from various owners of gas wells, pleading that they be allowed to utilize their gas for the extraction of gasoline until such time as some other market was available to them. It was brought out at the hearings to consider these petitions that the owners of these gas producing properties which were being drained by the off-setting wells of the pipeline companies might never have an opportunity to use their gas for light and fuel and the continued enforcement of the restrictions provided in Article 6008 would amount to practical confiscation. The Commission may regulate but it must not confiscate property, nor do we think it was fair not to give relief to these producers without markets when the discretionary power to do so was given us under Article 6008 as above quoted. We were advised by the Attorney General, under an opinion dated June 17, 1932, that after considering all of the facts that we were well within our authority in granting permits for the use of

this gas for other purposes than light and fuel. In connection with this matter, we were handed a petition signed by more than 6,000 producers, royalty owners and citizens of the Panhandle, urging that the independent producers [fol. 568] and landowners in this area had for years remained helpless and without revenue while the gas monopoly has been appropriating the gas from under their properties and that it was inconceivable that the Commission would refuse to allow them to use a portion of their gas for the manufacture of gasoline in the absence of any other market. It was pointed out that employment would be given at a time when sorely needed, and that the economic benefits to the State would be very material ones.

After the granting of a few permits and the subsequent passage of the Sour Gas Law, three new gasoline plants have been constructed in the Panhandle and two or three old plants, formerly closed down, are again operating. These plants have given a satisfactory market to practically all of the unconnected wells in the area.

The gas now being used for carbon black and natural gasoline manufacture is an additional revenue to the Panhandle and brings in much more money to the Panhandle people than does the payments from the gas utilities. At present there are 1,100 men employed in the production of natural gasoline. There are 48 natural gasoline plants in operation. There are an additional 1,000 men employed in the carbon black plants. The total payroll of these two enterprises amounts to approximately $3,795,000.00 yearly. The estimated total taxable value of gasoline and carbon black plants amounts to $20,000,000.00. During the year 1933, there was produced 5,306,139 barrels of natural gasoline and 200,000,000 pounds of carbon black. This has a sale value of approximately $14,000,000.00. In 1934, these revenues will increase and there will be more men employed. The gas pipeline companies produce their requirements from their own wells and buy no gas. Their total payments in royalties are about $400,000.00 a year and they pay out in rentals on undeveloped acreage approximately an additional $200,000.00 a year. As a source of revenue and employment of labor, it is nothing like as important to the Panhandle as the carbon black and natural gasoline industries.

[fol. 569] The attitude of the independents toward a solution is about this. Before the matter become so compli-

cated, a tender of a reasonable market would have adjusted the matter, but the controversy has caused the local people to analyze more closely their real interests. What they now see is that there is no justification for holding back this entire reserve for the light and fuel market of the utilities. These companies testified as their justification for refusing a ratable market, that the gas under their own properties would meet their requirements for 137 years. A low estimate of the present total gas reserve of this field is twelve trillion feet. At the present rate of withdrawals for all purposes, approximately a half trillion feet per year, the field will last at least 24 years. At the present rate of pipeline withdrawals, this quantity of gas will cover the requirements of the light and fuel market for 120 years. Beyond the Panhandle Field, in Oklahoma and Kansas, there is a large gas producing area running north for 150 miles. The wells in this territory are small but the total volume is perhaps equal to another Panhandle field. The independents refuse to recognize any serious harm to the public interest as long as there remains a reserve abundantly ample for the light and fuel market for another fifty years. Industry and science are moving rapidly and the civilization of the next generation may have no use for natural gas. If the present production for all purposes continues ten years longer, there will still remain more than enough gas to supply the present light and fuel market for fifty years.

It is a very difficult matter for us to recommend just what steps the Legislature should take toward the correction of this problem. Conservation naturally involves control of production by the body entrusted with the regulation of the p-oduction, in order to protect the various interests involved, and, unless a statute can be written in such a manner that it will withstand the attacks of the gas pipeline interests in the Federal Courts, the state cannot continue its original conservation policy to the point of appropriating [fol. 570] the properties of producers without a light and fuel market and delivering them to the pipeline companies with a monopoly on such market. It is possible that if a properly drawn bill was enacted to effect a complete divorcement of the pipeline companies from their producing subsidiaries and a constitutional bill was enacted to give us complete control of the gas production, we might regulate

the withdrawals of gas from the field in such a manner as to allow all producers a ratable market and correct, as far as possible, the inequities that existed heretofore. However, with the conflicting interests of the sour gas producers, the sweet gas producers without a market, the production of the pipeline companies now having the sole benefits of the light and fuel market, the oil producers, etc., all to be adjusted, and this complex problem being further complicated by the fact that the previous withdrawals from the field have unbalanced the amount of gas now in place under the various properties throughout the field, it is almost impossible to suggest a solution that will cure the situation.

If the gas pipeline companies have seen fit to relinquish their monopoly on the market outlet and had been willing to take a fair proportion of the gas from the wells without any market whatever, it would have been a big step toward the constructive development of this field. As above stated they own approximately 80 per cent of all the production and the purchase of 1/5 of the pipeline requirements should not have been such a great burden. The Railroad Commission, as well as numerous individuals, has done all in its power to get the pipeline interests to make any sort of a definite committment toward the furnishing of a market for the unconnected production, but these people have steadfastly refused to change their policy to the slightest extent. Certain suits have been brought in the Federal Court, seeking to compel various independent producers from selling their gas to the gasoline plants. The suits plead that the gas is being unlawfully used and wasted by being processed for gasoline and that serious drainage to the plaintiffs will result unless these operations are stopped. Should these operators be enjoined, they would of course be compelled to close down their wells and see their gas [fol. 571] drained from under their properties by the pipeline companies' wells. The gas companies, however, who are promoting these suits do not offer any market and, should they be successful in closing down the gasoline plant operations, they would be back in their old position as having a complete monopoly on the market for gas.

One important fact that the committee should bear in mind is that neither the sour gas law nor any permits, granted for the processing of the Panhandle gas for nat-

ural gasoline, permit these operations to continue in the event a reasonable market is provided these producers. In other words, all that is necessary to stop the alleged waste of gas is for the pipeline companies to provide such a market. Without their cooperation in this matter, or statutes that will effectively compel a market, the conservation of this gas for light and fuel purposes only is an impossibility.

This has been a rather lengthy report on the situation, but the size and complexity of the problem warranted, and we trust it will be of some benefit to your investigation.

Respectfully submitted, Railroad Commission of Texas, (S.) Lon A. Smith, Chairman; (S.) Ernest O. Thompson, Commissioner.

Mr. Cheek: We likewise would like to have the record show that the testimony heard by the Senate Investigating Committee of the Forty-Third Legislature and which was heard in 1934 was reduced to a printed document and that the table of contents shows that twenty-four statements and witnesses together were submitted to the Senate Investigating Committee, including the report of the Railroad Commission of Texas, which has just been offered.

The Presiding Judge: That is for the same purpose, subject to the same objection?

Mr. Cheek: Yes, sir. We would like to have the record show that the situation which existed in the Panhandle gas reservoir prior to the enactment of House Bill 266 was investigated by the subcommittee of the Committee on Interstate and Foreign Commerce of the House of Represen- [fol. 572] tatives for the Seventy-Third Congress and that it appears in the printed volume marked Part Four, labeled "Petroleum Investigation" from page 2209 to page 2296 of that record of testimony.

The Presiding Judge: Is that offered the same way, as part of the testimony submitted to the Legislature?

Mr. Cheek: Of Texas?

The Presiding Judge: Yes.

Mr. Cheek: I don't know; it is to show the public interest.

The Presiding Judge: Those other documents I thought you said were all matters which the legislature had before

them in considering the law and they were offered for that purpose.

Mr. Cheek: That is true.

The Presiding Judge: Now, this is offered on a different basis.

Mr. Cheek: Well, it isn't actually, but I just don't want to be misunderstood as making the statement that I can prove or intend to prove that this was before the Legislature. It was printed at that time, and the inference, of course, would be that it was.

The Presiding Judge: You just want to prove that that was existing material. We have to assume as far as the Legislature is concerned that they had everything before them that was then printed and available, whether it was or not.

Mr. Cheek: Yes, sir, it is offered on that basis.

The Presiding Judge: It is material that they could have had access to, and are presumed to have had.

Mr. Cheek: Yes, sir. Now, in connection with this testimony of the Cole Committee, I desire to read into the record testimony in part of Mr. S. A. L. Morgan. "Mr. Cole, (who was chairman of the committee): We will hear you, Mr. Morgan.

"Mr. Morgan: My name is S. A. L. Morgan. I represent the Texoma Natural Gas Company, the Cities Service Gas Company and the Panhandle Eastern Pipe Line Company." That appears on page 2254 of the record of testimony. On page 2259 Mr. Morgan was asked this question, it reads as follows:

"Mr. Pettengill: What is your remedy?

[fol. 573] Mr. Morgan: My remedy is to stop the waste of this natural gas just like we have stopped it in every other state except the State of Texas. I do not think that any man has a right to waste gas, pop it into the air, to the extent of a billion cubic feet a day, gas that is equivalent to sixty-three million barrels of oil, equal to four hundred and sixty-seven thousand carloads of coal a year, in order that he may make a little money. I think that he ought to be required to stop the production of this gas until he can find a market for the residue gas, either for use of light and fuel or for some other legitimate use. In this connection, I want to make this observation: The carbon black industry

has been flourishing in the Panhandle, and properly so. Mr. Keffer made the observation that they are permitted to use it for carbon black. I think it has a legitimate place in production, and although we own sixty-one per cent of the entire reserve we are not complaining when they use it for carbon black, when they not only take their own, but when they are taking our gas as well, and we believe that they have taken a great deal more of our gas than we will be able to take at the same time. We think it is a legitimate industry and we are willing to submit to the drainage that is burned in carbon black plants; we are not objecting to that, merely because we are not able to protect ourselves, because they are draining it out of our reservoir. We believe that to be a legitimate taking of gas."

Now, we offer this testimony for all purposes that I have just read.

Mr. Cheek: Now, we offer likewise out of this record the statement of A. C. Smith, the Secretary of the Panhandle Conservation Association, Amarillo, Texas, which appears on page 2229 of the record:

"Mr. Cole: Mr. Smith, will you give your full name for the record?

"Mr. Smith: A. C. Smith, Secretary Panhandle Conservation Association, 804 Amarillo Building, Amarillo, Texas.

"Mr. Cole: You have a group of gentlemen here to present the Association's views on this matter?

"Mr. Smith: Yes, sir.

[fol. 574] "Mr. Cole: We will take them in any order which you want to present them.

"Mr. Smith: Mr. H. M. Stalcup will be the first witness.

"Mr. Cole: All right, Mr. Stalcup."

We offer the statement of Mr. Stalcup appearing on page 2229 to page 2241, as presenting the views of the Texas Panhandle Conservation Association.

The statement was then marked Defendants' Exhibit No. 79, and is as follows:

EXHIBIT No. 79

Statement of H. M. Stalcup, Vice President in Charge of Production, Skelly Oil Co., Tulsa, Oklahoma

Mr. Cole: All right, Mr. Stalcup. Will you give your full name and connection with the industry for the record?

Mr. Stalcup: My name is H. M. Stalcup, vice president in charge of production, Skelly Oil Company, Tulsa, Oklahoma.

In the interest of brevity that you speak of, Mr. Chairman, and I hope some continuity and a little clarity, I have reduced what I have here into writing, and I will give you gentlemen a copy of that.

Along a granite ridge in the Texas panhandle lies the world's greatest gas reserve, and one of its great oil reserves. It is literally mountainous, both in its stupendous size and geological character. The present known extent of the productive formation covers approximately 1,350,000 acres, extending over portions of eight counties, for a distance of 125 miles, and having an average width of about 20 miles. Of this area, about 1,000,000 acres is proven productive of sweet gas. The area productive of oil has been variously estimated at from 150,000 acres to as much as 205,000 acres, and extends for a distance of about 90 miles along the north flank of the structure. A portion of this oil-producing area is also as productive of both "sweet" gas and "sour" gas, that is, gas containing considerable quantities of hydrogen sulphide. The balance of the area, roughly approximating 200,000 acres, produces only "sour" gas.

[fol. 575] Competent engineers have estimated that this largest of nature's storehouses originally contained approximately 16 trillion cubic feet of recoverable gas, and from 800 million to 1 billion barrels of recoverable oil, depending upon the extent of the area regarded as oil productive. Since these oil reserve estimates were made, many new areas have been proven productive, and certain older areas extended, so that one is probably justified in thinking in terms of the larger estimate.

More or less scattered along the extent of the oil-producing portion of the field, there are now about 2,000 producing oil wells, while there are about 750 gas wells, somewhat similarly located throughout the gas area. Several hundred oil wells have been aban-oned on account of early depletion, particularly in the area of earliest intensive development around the Borger sector.

Through these wells, there has been produced to date approximately 4½ trillion cubic feet of gas, or in excess of 25 per cent of the total estimated supply, and approximately

228 million barrels of oil, or a little less than 25 per cent of the total estimated supply.

In the panhandle field oil and gas occur in at least five different porous zones or horizons within the same reservoir, and there does not exist any distinct oil sands, gas sands, or water sands, as usually occur in most fields. All these productive zones are undoubtedly connected one with the other. This is evidenced by the fact that, regardless of the varying depths and geographic location, the initial formational pressure of all productive zones has been found to be uniform at approximately 430 pounds per square inch in gauge. It has also been observed that dissipation of energy or pressure in one productive zone is reflected by a lowering of pressure in the other zones. Additionally, a great number of oil wells have been so completed as to expose in a single-bore hole two productive zones, and these mechanical connections intensify the degree of the intercommunication between the several porous productive strata. Probably hundreds of properly completed oil wells—that is, wells drilled and cased so as to have exposed only a single oil-producing stratum—have been so manhandled by operators through either shooting with explosives or ripping the protective string of pipe as to allow [fol. 576] great quantities of gas from the dry gas zone above the oil pay to be produced with the oil. This has been one of the greatest single factors in the alarming and shocking dissipation of pressure in this field. The fact that this upper gas could be produced and delivered to gasoline plants under sufficient pressure to obviate the necessity for expensive mechanical compression, and consequently, tended to reduce investment in costly pipe-line gathering systems plus a ready market for large quantities of the residue gas; that is, gas stripped of its gasoline content, for carbon-black manufacture, has caused a tremendous development in various forms and varieties of gasoline-extraction plants throughout the field, that have a throughput capacity at the present time of approximately 2 billion cubic feet of gas per day.

This committee should get clearly in mind the important and very definite distinction between the two types of gasoline plants that they will hear discussed in this hearing.

On the one hand is the type that may, I think be termed the legitimate casinghead-gasoline plant, designed for util-

izing only real casinghead gas, or that gas unavoidably produced with oil and coming from the oil formation. Someone has properly designated such plants as "scavengers of waste, conservators of the oil field", for the very simple reason that they actually utilize the gas inevitably, unavoidably produced from oil wells; first, for extracting its valuable gasoline content and utilization of the resultant residue gas for development and operating purposes, and in the situation under consideration for equally valuable carbon-black manufacture. Probably no single development connected with oil-production practice in recent years has been more completely in tune with, nor a greater aid toward, real conservation than that of casinghead-gasoline plant operation.

On the other hand is the type of plant usually referred to as "stripping plants", which, on account of ill-advised legislation in Texas, commonly referred to as the "strip- [fol. 577] ping law", to be more fully dealt with by others in this hearing, have sprung up like mushrooms throughout the panhandle. These plants are easily and quickly constructed at small cost in comparison with their large gas-handling capacity, and operate on gas under its natural pressure from wells producing gas only. Such plants are invariably connected to but a handful of wells which, on account of their large productive capacity, supply such a plant with its capacity requirements under the provisions of the statute above mentioned, allowing such utilization to the extent of 25 percent of the open flow capacity of such wells. As a matter of fact, it is common knowledge that on account of the extreme looseness—to be charitable—with which the State authorities administer this law, many such wells are producing their maximum capacity of valuable gas into and through such "stripping plants" for its small content of gasoline, averaging about thirty-one hundre-ths of a gallon per 1,000 cubic feet of gas, with the residue gas being wantonly blown into the air. The gross value of this pittance of gasoline at the present market price is a little less than 1 per cent, and under such an operation, about 3 per cent of the heat units in the gas is utilized while the remaining 97 per cent is blissfully blown into the air; a typical example, if ever there was one, of "saving at the spigot and wasting at the bunghole."

Under such an operation as just mentioned and under the most favorable contracts existing, the royalty owner receives the almost unbelievably small pittance of approximately three one hundredths of a cent for each 1,000 cubic feet of gas taken from his land. Such a shocking practice has been aptly compared in its wanton wastefulness to killing fat beet cattle for their hoofs to make buttons and knife handles, and leaving their meat and hides to rot on the plains.

To bring out the magnitude of the loss of revenue to royalty owners, the royalty interest in the total volume of remaining reserve, which is estimated at approximately 12 trillion cubic feet, is calculated on a basis of current average price of pipe-line gas. The total royalty interest [fol. 578] if all the gas were used for stripping purposes only, would amount to $3,600,000.00 while if this same volume were all used for pipe-line purposes at current prices it would amount to $56,700,000.00. The total loss in royalty revenue, therefore, would be $53,100,000.00 to say nothing of the very limited and inequitable distribution of the royalty. The loss to the State of Texas, in gross production taxes would, of course, be in the same proportion.

On account of the condition of excessive producing capacity that has been general in the oil-producing industry for the past several years, the panhandle field, in common with most other relatively new fields, has been forced to operate under varying degrees of proration almost from inception of its major oil-producing activity.

At the present time its official potential daily producing capacity, as determined by the Texas Railroad Commission, is approximately 285,000 barrels. Of this a daily field allowable of 56,800 barrels is being produced on a percentage of potential proration basis.

I hold no brief opposing the principle of oil proration. On the contrary, I heartily favor the principle in periods of excessive production, in order to maintain correlative rights and an equitable sharing of the existing market demand by all producers. Entirely aside from the matter of waste, however, it does seem grossly unjust and inequitable to rigidly restrain an oil producer in the production of his commodity, while allowing the owner of a gas well, often just across a barb-wire fence, and each producing from a common reservoir, to produce his commodity prac-

tically unrestrained and in a manner that noy only is criminally wasteful of his own commodity but has the effect of absolutely destroying his neighbor's property. If that isn't illegal, it ought to be. Certainly it is immoral.

Additionally, I find myself in strong adherence with the school of thought that regards as basically sound the principle that the limiting of production from an oil well to an amount materially less than its full productive capacity tends toward a greater ultimate recovery of oil, principally through the saving of gas and the attendant conservation [fol. 579] of formational energy, and the maintenance of the best possible condition of equilibrium within the producing formation. This maintenance of pressure and energy is not only absolutely essential to the moving of oil through the producing strata to the well bore where it may also exert a valuable service in lifting the oil to the surface, this obviating expensive mechanical elevation, but is equally necessary in order that the gas naturally in solution in the oil be retained therein to the greatest possible degree, so that the viscosity of the oil be held as low as possible, thereby aiding in its travel through the pores of the rock from which it is produced to the well bore.

When the method of development and operation of an oil field is the reverse of that just mentioned, as, for a glaring example, the panhandle field, the gas originally in solution in the oil is liberated entirely too freely, with the result that more and more of the gas rushes quickly and easily through the oil-producing formation, leaving behind it more and more oil of a continuingly higher viscosity, until the time comes, all too soon, yes, in the past entirely too many fields, shamefully soon, when, on account of depleted energy on the one hand, and greatly increased viscosity of what we might term residue oil on the other hand, the dribble of oil into the well bore practically ceases and the well is abandoned as depleted. Depleted of what? Certainly not, in most cases, of its oil content for, according to such an eminent and dependable authority as the Bureau of Mines, we have in the past prodnced probably no more than 25 per cent of the original content of recoverable oil from our pools before we started abandoning them. The basic reason why such a statement can truthfully be made is principally because, under the archaic fashion in which early-day producing activities were carried on, oil pro-

ducers apparently went out of their way to dissipate the unappreciated; inherent energy as rapidly as possible. Such a practice is enough to make our industry hang its head in shame. What a commentary upon Yankee ingenuity and efficiency, to leave 75 per cent of a most valuable and irreplac-able natural resource wasted, unrecoverable in the ground.

[fol. 580] Happily, our industry, generally speaking, can with some justification point with pride to a tremendous improvement in this all important problem in recent years, through a growing appreciation of the value of more efficient development and operating plans that are tending toward pressure maintenance in our oil fields, which will inevitably be reflected in much more efficient recovery in the future.

Unhappily, this cannot be said of the panhandle field. Here the floodgates of waste have been opened wide. Here, for some strange and unbelievable reason, oil producers have been singularly prone to overlook the devastating effect of the shocking, senseless, unthinkable waste of gas and energy that has proceeded rampant for 8 long years, and which has grown in the past 2 years with a reckless abandon that can only mean the absolute destruction of both oil and gas properties.

Mr. Mapes: Mr. Stalcup, is the argument that you are making directed to the use of natural gas for fuel and heat, as well as for the recovery of natural gasoline?

Mr. Stalcup: I am leading up to that, Mr. Mapes, but I might have stated, as a preface to these remarks in the first place that I am here primarily as an oil producer. I say further on in this article that my company has no interest in any gas pipe line serving this field or any other field. We have a very negligible interest in gas-producing properties. We are terribly interested in stopping a waste that is going to ruin a wonderful oil field, and I come to definite, and I hope constructive, suggestion with reference to remedying the situation.

I don't know whether I get your question or have answered it, but I make those remarks as a preface.

Mr. Mapes: My question was whether your argument is directed toward natural gas used for heat and light purposes as well as its processing for the recovery of natural gasoline?

Mr. Stalcup: No. No. We could not go that far. Relatively, in many small fields——

Mr. Mapes (interrupting): So far as its effect on the production of crude oil in the field is concerned, it would not make any difference whether it was extracted for heat [fol. 581] and fuel or whether it was extracted for the recovery of natural gasoline.

Mr. Stalcup: That is right. A wasteful use of gas is what I am talking about, and the first waste was by the oil men manhandling it, as I say, and ruining oil wells. There are wells out there producing millions of feet of gas and no oil.

Mr. Cole: Does your company have producing oil wells out there?

Mr. Stalcup: Yes.

Mr. Cole: You do not mean that the Skelly Oil Company is not interested in pipe lines?

Mr. Stalcup: Not gas pipe lines; no, sir.

Mr. Cole: You are interested in oil pipe lines?

Mr. Stalcup: Yes, sir; but no gas pipe lines.

Mr. Pettengill: Well, if the Texas Legislature went back to its former position of *b*orbidding the use of natural gas except for fuel and light, would that solve the problem from your standpoint?

Mr. Stalcup: Not quite, I don't believe. Personally, I think the use should be liberalized; I think it should be made to include efficient utilization for carbon black manufacture, which is as useful a purpose as for light and fuel. I think it is probably becoming so; I think it is probably becoming to be recognized as just as legitimate a use as for light and fuel, and personally, I would like to see legislative sanction for carbon black manufacture from a*n*d kind of gas, possibly using residue gas, sour gas, and conserving the sweet to the greatest possible extent and stop all wasteful production of gas by the guise of its being casing-head gas coming with oil when the well makes 3 or 4 barrels of oil and 4 million or 5 million feet of gas per day. That was done in the panhandle, as I say, for years before this, that I term "ill-advised", legislation was passed, which threw open the flood gates.

Mr. Pettengill: Well, put the question another way. If the Texas Legislature forbade the use of natural gas for

the purpose of manufacturing natural gasoline, would that solve the problem?

[fol. 582] Mr. Stalcup: No, sir; I don't think that would be a solution. I think the gasoline should be extracted before any use is made of it, whether it is light and fuel or carbon black manufacture or whatever it is; the gasoline content ought to be extracted. For its utilization for any other fuel purposes or carbon black manufacture.

Mr. Pettengill: Perhaps at the end of your statement you have some recommendations, and I will wait for that.

Mr. Stalcup: Keeping in mind that all-important fact that the oil and gas produced in the panhandle field come from a common reservoir, let us examine this situation more closely.

Of the 4½ trillion cubic feet of gas thus far produced, roughly, one-half of it has been blown into the air, and a large portion of that without even extracting its meager content of gasoline. Of that portion that was processed through gasoline extraction plants and afterward used for field development and operating requirements and carbon black manufacture, much has been wastefully produced by oil operators under the guise of its being real casing-head gas, through the simple expedient of ripping or shooting the protecting oil string of casin as heretofore mentioned.

Then, with the passage of the so-called "stripping law", which became effective in the spring of 1933, all semblance of restraint, caution, or subterfuge was thrown to the winds and the wasteful senseless withdrawal of gas from all sources increased by leaps and bounds until now approximately 2 billion cubic feet of gas is being produced each day, with 1 billion cubic feet of that being wasted into the Texas atmosphere.

One billion cubic feet of gas blown to the air each day. One reason why the people of Texas permit this shocking, this unthinkable waste of a natural resource of the State [fol. 583] to continue is because the phrase "one billion cubic feet of gas blown into the air each day" cannot give a picture of its true meaning to a layman's mind. Gas cannot be held in the hand, cannot be seen with the eye. Is a billion cubic feet much or little? Not every layman knows. But coal can be held in the hand, can be seen with the eye, can be thought of concretely. So let us see how much high-grade bituminous coal would equal in British

thermal units, or heat value, a billion cubic feet of panhandle gas. It would require 740 carloads of such coal to equal in heat value the amount of natural gas that is being wasted in the Texas panhandle each day. Seven hundred and forty carloads of coal would form a train 8 miles long. Can it be imagines that the people of Texas would sit complacently by while the torch of a human firebug burned to waste 740 carloads of coal each day in this State, so destroying its heat values? The very idea of the equivalent gas in the panhandle field is worse because gas in its cleanliness, convenience, and combustion efficiency is one of the greatest boons that ever came to civilized men and women. Another reason why this gas waste is even worse than the wanton waste of such gas production will inevitably have upon the recovery of oil.

Mr. Mapes: You say that now approximately 2,000,000,000 cubic feet is being produced each day with 1,000,000,000 cubic feet being blown into the Texas atmosphere.

Mr. Stalcup: Yes, sir.

Mr. Mapes: When you speak of 1,000,000,000 feet, are you speaking of the 1,000,000,000 that Mr. March stated was being processed for gasoline?

Mr. Stalcup: There is about 2,000,000,000 feet being processed for its gasoline content and then about half of the remaining residue is utilized for, with some 2,000,000,000 feet of gas, is being produced in the panhandle—let me correct that statement. Two billion feet is being produced in the panhandle daily. Of this amount—I am not sure of my figures—but approximately 250,000,000 is going through the dry-gas lines to eastern markets, or to markets. Of the remaining, practically all is processed through natural gasoline plants, one kind or another, for its gasoline content, which is extracted, and 1,000,000,000 feet of that goes into the air and the rest is being used for carbon black [fol. 584] to the extent of about 450,000,000 cubic feet daily. The balance is used for plant operations, development, and operations.

Mr. Mapes: So that this 1,000,000,000 feet, which is blown into the air and is being wasted, is being processed, however, for gasoline?

Mr. Stalcup: Most of it.

Mr. Mapes: Yes.

Mr. Stalcup: I might, while we are diverting——

Mr. Mapes: Of course the gasoline manufacture-s would not be willing to admit that is being wasted, I take it?

Mr. Stalcup: Well, my company is one of the principal gasoline manufacture-s in the panhandle, as well as being an oil producer, and we have been trying to get this waste of gas, not only that which is being blown into the air but the rest of it stopped. It is being wastefully produced in the ground where it comes from, and we are trying to keep it there, all of the gas that has been all of these years wastefully produced, we have been trying to get something done about it for years.

Mr. Mapes: I understand your company has taken gasoline from the natural gas.

Mr. Stalcup: Yes, sir.

Mr. Mapes: And you would prohibit this?

Mr. Stalcup: Not the legitimate casing-head gas. I will comment on that in a moment.

Mr. Mapes: You do that in connection with the production of oil?

Mr. Stalcup: That is right. And the gas that comes with the oil. As I say, that is a conservation movement, because we have produced that. It is inevitably produced with the oil.

While we are in diversion from the paper I would like to give you a little comparison, give you gentlemen, laymen, some more appreciative of what this gas amounts to.

[fol. 585] The billion cubic feet of gas that is being daily blown into the air, taking the conservative figure of 50 cents a thousand as probably being a fair average at the point of domestic consumption, amounts to a half million dollars every day. That is a terrible waste. From inception to date in the panhandle it has been approximately 2 trillion cubic feet of gas, in excess of 2 trillion feet of gas, blow into the air. That amount of gas at that same rate of value to the ultimate consumer is approximately $1,000,000,000.

The gas that has been wasted into the air in the panhandle at that rate has a value of at least five times the oil that has been produced.

I repeat that such waste as that is simply unthinkable; still it is going on and has been going on for years and is increasing with an intensity that will absolutely destroy the field if it is not checked.

Mr. Pettengill: Well, those losses in dollars are not very accurate, are they, because you give the value of it where the customer buys it.

Mr. Stalcup: That is right, just for the sake of comparison.

Mr. Pettengill: Plus what the producer is getting, transportation costs and the profit to the distributor.

Mr. Stalcup: That is right.

Mr. Pettengill: How much value does it have on the field, or what is that value?

Mr. Stalcup: That value runs all of the way from 2 cents to 4 cents and possibly 4½ cents. I think 3 cents a thousand cubic feet is probably a fair figure to use.

Mr. Pettengill: Three cents at one end and 50 cents at the other end?

Mr. Stalcup: Yes, sir.

Mr. Pettengill: The 2,000,000,000 feet that you speak of—is that all natural gas or is that inclusive of casing-head gas?

Mr. Stalcup: Well, natural gas, of course, includes casing-head gas. They are both dry gases, as we term them. That is the gas in the field. It includes both gases, but we produce casing-head gas from them.

[fol. 586] Mr. Pettengill: Then, casing-head gas, you say, is a gas that is inevitably produced?

Mr. Stalcup: With the oil.

Mr. Pettengill: And, how much do you subtract from the 2,000,000,000 cubic feet to get the natural gas; how much of the 2,000,000,000?

Mr. Stalcup: Is casing-head gas?

Mr. Pettengill: Yes.

Mr. Stalcup: Well, that is impossible for me to answer for the reason that I just gave a moment ago, that the wells have been manhandled to use my expression again; the steel pipes have been shot with explosives; are almost reduced to ruin to bring in extraneous gases from the upper formations into the lower ones, or the wells, so that it is practically impossible to tell you how much is really honest-to-goodness casing-head gas. It would just though, just about, to make a rough approximation, to give you some sort of an idea about it, that probably certainly not to exceed a half a billion feet, 500,000,000 feet a day, or a

quarter of it. That is a very, very rough approximation of it. I may be wide of the mark.

Let us carefully, yet as briefly as possible, consider that most important aspect of the problem.

Practically speaking our oil fields may be divided into two major groups insofar as the source of their inherent formational pressure and energy is concerned. In one type of field, a hydrostatic head of water is the source of the motive power that drives the oil through the producing strata to the well bore. In the other, the motivating energy responsible for oil recovery is gas under pressure. In some fields there occurs a combination of both of these sources of energy. The committee should keep in mind the fact that gas is a most highly compressible substance, while oil and water are, practically speaking, noncompressible.

[fol. 587] The panhandle oil field falls clearly in the gas-drive type of field. True, there is water found in association with the oil, but it is under no hydrostatic head. It has no driving power, and is, consequently, more of a hinderance than an aid in oil recovery.

Keeping in mind then that gas under pressure is the sole motivating force—except for the very negligible effect of gravity—to drive oil through the formation of the bore of a panhandle oil well, where only is it possible to produce it, we readily see the important bearing that the preservation of such energy through conservation of gas has upon the ultimate recovery of oil. That is a fact with respect to any gas-drive formation. On account of a preculiar situation existing in the panhandle oil field, I believe it is, roughly, just three times as important there as in most oil fields, and for the following very definite reason: The normal formational pressure expected in an oil-producing stratum at 3,000 feet depth—an average depth for the area under consideration— would be approximately 1,200 pounds, whereas, in the panhandle field, on account of unusual geological conditions existing, which I will leave to my geological friends to explain, an abnormally low pressure of only approximately 430 pounds existed in its virgin state. Thus we find that at the very discovery of this oil field, it was, for all practical purposes, already two-thirds depleted of expected normal energy. Consequently it has seemed all the more important that the oil-producing

energy of this particular oil field be jealously guarded against its needless dissipation.

There will be introduced in evidence by another witness, I think, a pressure map of the entire panhandle field, which will show more graphically than words the effect of dissipation of tremendous volumes of gas in lowering formational pressure. It will be found that a very large portion of the oil-producing area of the field is already below 200 pounds pressure. As a matter of fact, there are isolated sectors of considerable extent that have less than 100 pounds pressure.

[fol. 588] Using the estimate of 1,000,000,000 barrels as representing the original content of recoverable oil of the panhandle reservoir and deducting the 228,000,000 barrels produced to date, there remains an estimated 772,000,000 barrels of recoverable oil. From my experiences and knowledge of the producing branch of the oil industry, I seriously doubt that much more than one-third of this volume of oil will ever be produced if the profligate waste of gas continues unabated in the panhandle field. A little more than a year ago, in a suit by Danciger Oil & Refining Company, of Texas, vs. The Members of the Texas Railroad Commission, competant engineers testified that in their judgment the waste of gas then going on, if allowed to continue—and the volume of gas wasted at that time was much smaller than it is today—would result in the loss of some four hundred to five hundred million barrels of otherwise recoverable oil. This testimony was not controverted.

Such an expectation is borne out by recent experiences in connection with my own company's operations in the panhandle. After drilling some 25 oil wells on one of our major oil-producing leases in that area, which wells had initial productive capacities averaging approximately 500 barrels daily, we discontinued further drilling about 2 years ago on account of unfavorable conditions existing with respect to the crude-oil market. Several months ago we resumed development and were so confident of obtaining favorable results that we drilled five wells simultaneously alongside of and immediately offsetting the last wells drilled a little more than 2 years prior thereto. Imagine our surprise and disappointment when, upon drilling the producing formation, which was, incidentally, found regular and at its anticipated depth, we found it to be so de-

pleted of energy that whereas previous wells had filled up with oil approximately 1,400 feet these wells would fill up only from 500 to 700 feet with oil. Upon taking shut-in [fol. 589] bottom-hole pressure readings, as has been our practice for several years in completing wells, we found that in the case of one well the pressure was so low that it failed to record at all with our instrument that must have a minimum of 135 pounds pressure to cause it to record. Consequently, we did not know that the pressure of this well is, but we do know that it is less than 135 pounds. The other wells range from 180 pounds to 268 pounds pressure. Upon official tests these five wells ranged in productive capacity from 10 to 42 barrels daily.

In view of the fact that these particular wells were located in the definitely proved oil trend, and, in fact, along the most prolific portions of the proven trend, we anticipated an initial productive capacity for each of the wells of 10 or 15 times what we secured. From our knowledge of this region and our intimate knowledge of the particular property, we can think of no possible explanation for this deplorable state of affairs other than that disclosed by the bottom hole pressure readings, indicating an abnormally low-pressure area, which in turn, in my opinion, was cause- to a very large extent by waste of gas.

Obviously, we cannot afford to drill oil wells 3,200 feet deep for an initial productive capacity of 25 or 30 barrels, and a tremendous volume of oil in place under a large portion of this particular oil property will probably remain forever unrecovered.

It is for this reason, if for no other, that the company that I represent confidently hope that this committee can be of service in preventing the virtual destruction of any such tremendous volume of one of this country's most valuable natural resources.

I do not like nor intend to "sale under false colors." The Company that I represent—Skelly Oil Company—has no [fol. 590] interest in any gas pipe line serving the panhandle field, nor elsewhere, and has but a negligible interest in gas-producing properties in the panhandle. We are vitally interested from the standpoint of an oil producer and natural gasoline manufacturer. We are now operating several casing-head gasoline plants in this field, and a portion of the gas therein processed is of the wastefully pro-

duced nature that I have been condemning. We also operate, under sanction of the legislative act heretofore mentioned, a relatively small gas-stripping plant of the type condemned. These operations—that is, the processing of wastefully produced gas through our legitimate casing-head gasoline plants and the stripping-plant operation in its entirety—are being carried on as a messure of self-defense and are repugnant tp our sense of good business and conservation of a valuable natural resource. We invite and will genuinely applaud action by this committee or any other agency that will make it impossible for such waste to be committed in Texas by my company or anybody else.

I am not a lawyer, but my legal associates advise me that they doubt that the Congress has any authority to remedy this condition. It, nevertheless, seems to me that this committee should take cognizance of this tremendous waste of a natural resource with its attendant destruction of property rights, and that it might recommend to the Legislature of Texas that a State law be passed, which might cover the following points, as a suggested solution of the panhandle gas-waste problem.

And these proposed suggestions are the same, identically, with one small addition that I shall comment on when I come to it, that I made to the senate investigating committee of the State when it was in Amarillo last April.

First, repeal the so-called "sour-gaw law" and make of it what it was originally designed to be, a law specifically authorizing the utilization of gas from sour-gas wells for the extraction of its gasoline content and the utilization of the attendant residue gas for carbon-black manufacture, such utilization, in the interest of equity, obviously to be limited as nearly as is possible in practical application to the same percentage of take of open-flow capacity as that of sweet-gas wells.

[fol. 591] Now, my addition would be to still further liberalize the use of a gas, if necessary, for meeting legitimate demands for carbon-black manufacture. This one first proposal, coupled with one I am coming to, would have the effect of setting aside to the dry-gas-pipe lines and other lines the essential market of sweet gas.

Mr. Cole: You propose that as your one recommendation? In other words, you want this committee to recommend

something along the same line you recommended to the senate committee?

Mr. Stalcup: That is at least what I thought I could recommend.

Mr. Cole: I see.

Mr. Stalcup: If my legal advisers are correct—I do not know whether they are or not. I do not profess to know.

Mr. Pettengill: Your firm might employ Mr. Margold.

Mr. Wolverton: You seem to have some of the same difficulty with the lawyers that the members of this committee have had with some of the engineer witnesses.

Mr. Stalcup: Yes. Not being a lawyer or an engineer or a geologist, I can speak freely.

Mr. Cole: Do you want to complete your statement?

Mr. Stalcup: Yes.

Second, the adoption and rigid enforcement of a reasonable and sensible gas-oil ratio rule which will entail the reconditioning or reclassification of many offending so-called "Oil Wells." Such a gas-oil ratio rule will of necessity, on account of certain conditions prevailing in the panhandle oil field, have to be rather liberal as compared with what would ordinarily be regarded as a reasonable rule, and this rule will have to be particularly flexible in character and will have to be enforced under a rule of reason in order to accomplish the good that it would be designed to accomplish, instead of injury.

Third, the adoption by gas-pipe-line companies of a policy of ratable purchasing and, in the event such gas-line companies do not voluntarily adopt such a policy, legislation to compel such ratable purchasing, to the end that all owners of sweet-gas acreage be given their proportionate [fol. 592] part of the available market for such gas. In order to be equitable and workable, any plan of ratable purchasing must of necessity include, in addition to "wide-open flow", such equally important factors as "shut-in pressure", "acreage", and possibly others.

Fourth, to make equitably operative points numbered 1 and 3, it will be necessary to put into effect voluntarily or compulsorily, the principle of utilization in certain portions of both the sweet and sour gas regions, so as to provide all owners of either sweet or sour gas acreage their proportionate part of the available markets without making necessary

the drilling of countless, and at the same time needless, wells.

Mr. Cole: Mr. Lindsay, one of the technical staff, suggested that the repressuring idea be subsidized to an extent by the Federal Government.

That is your opinion on this, and, in passing on it, what in your judgment would be its effect as a waste preventive?

Mr. Stalcup: I think if a statute were passed in the State of Texas applicable to this situation to flowing of any gas, and should be required to be reintroduced into formation, that it is possible it would have the effect of stopping a great portion of the wasteful production out there. As to just how practicable it would be to reinject it for storage purposes until it was needed later, just how practicable that would be, frankly, I am not competent to testify because I do not have sufficient definite cost on it.

Mr. Cole: You are not able to say what the approximate expense would be?

Mr. Stalcup: No.

Mr. Cole: After the casing head has had been taken out?

Mr. Stalcup: Yes.

Mr. Cole: You are not able to pass on that?

Mr. Stalcup: No. I am in favor of the principle of reinjecting the gas on the basis of conservation, but as applied to this particular situation I do not have the data.

Mr. Cole: Thank you very much, Mr. Stalcup.

[fol. 593] Mr. Mapes: Is the statement of Mr. Marsh that the Panhandle Conservation Association was organized and financed and directed by the Natural Gas Utilities correct?

Mr. Smith: The natural gas operators and the natural gas well owners are members of the association, but the association as an association represents the interest of the Panhandle, including the land owners, the royalty owners, and the gas and oil companies, as well.

Mr. Mapes: Is it financed by the natural gas utilities?

Mr. Smith: Financed by voluntary contributions from its members."

Mr. Cheek: We offer likewise that portion of the address of Harold L. Ickes, Secretary of the Interior, to the American Petroleum Institute in Dallas in the fall of 1934, where he discusses the conditions which existed in

the Panhandle field of Texas prior to the enactment of House Bill 266. It appears on page 42 of this Oil and Gas Journal as marked.

The instrument was then marked Defendants' Exhibit No. 80, and is as follows:

EXHIBIT No. 80

Devilish Waste

I had not expected to discuss at this time wasteful methods employed in the production of oil, but there has just been brought to my attention an example of such cruel and devilish waste that it almost staggers the imagination. There was brought to me in Washington, while I was working on this speech, a printed report entitled "Texas Panhandle Field, A Study of Gas Wastage and the Feasibility of Returning Waste Gas to Reservoir," which was prepared by an eminent committee of oil engineers whose names sponsor the report. I now quote from this report:

[fol. 594] "From reports in the Pampa office of the Texas Railroad Commission, we find that for the month of June, 1934, gas was being blown into the open air from the Texas Panhandle Field in the approximate daily amount of 1,000,000,000 feet. The mere statement that 1,000,000,000 feet of gas is being wasted daily does not illustrate the significance of this great economic waste. It must be realized that the wastage is accumulative and continuous. The following comparisons tend to show what this wastage means:

"1. The State of Texas ranks first in the United States in the sale of Natural gas. Yet if the gas blown into the open air from the Texas Panhandle Field could be converted into gas produced and sold from a state which now has no gas production at all; that state would surpass all other states in the Union and run Texas a close race for first place.

"2. If 62,634,000 bbls. of fuel oil were poured onto the ground the waste of heat energy would be the same as waste of 1,000,000,000 feet of gas per day for a period of one year.

"3. Further significance of the magnitude of this waste is illustrated by the fact that in one year it amounts to the equivalent in heat energy of 24,333,000 tons of Texas lignite coal. This amount of coal would fill 487,000 freight cars.

"4. The total electric power consumed in Texas during the year 1930 was 2,911,576,000 kilowatt hours (Texas Almanac). The amount of gas wasted in one year at the present rate is sufficient as a fuel to develop this enormous amount of electric current 6.4 times over.

"5. This amount of gas, on an annual basis, is sufficient as a fuel to gin 810,000,000 bales of cotton. Texas gins about 4,000,000 bales of cotton per year.

"6. It is sufficient as a fuel to produce 730,000,000 tons of ice in a year. It is estimated that Texas produces about 6,000,000 tons of ice per year.

[fol. 595] "7. If the present gas wastage in the Texas Panhandle Field were utilized as a fuel in a large electric generating plant there could be 2,575,000 horsepower per hour produced. This power would be 3.7 times the total power output of 700,000 horsepower per hour of the Grand Coulee dam and power plant which is being constructed by the U. S. Government in the Columbia River Basin of Washington State at a cost of $63,000,000. It would be 4.2 times the ultimate horsepower output of 612,000 horsepower per hour of the Wilson dam and power plant of the Muscle Shoals project in the Tennessee River Valley.

"In February, 1933, prior to the issuance of "stripping permits" by the Texas Railroad Commission and likewise prior to the passage of the 'stripping law' (so-called sour-gas bill) by the Texas Legislature, the total gas blown to the air amounted to the then enormous figure of 300,000,000 cubic feet of gas per day. Since February, 1933, this wastage has increased by rapid progression, having more than tripled in total volume by the month of June, 1934. Under the present setup the 'sky is the limit,' and there is nothing that will prevent this wastage from being tripled again and again.

"I call this situation to the attention of the people of Texas in the confident expectation that they will see to it

that such insane waste, as has been so graphically described in the report from which I have quoted, be ended promptly and effectively. People are hungry in Texas as a result of the depression through which we are passing; they are dependent upon the Federal Emergency Relief Association to supply them with food and shelter. The Public Works Administration has poured many millions of dollars into this state to furnish employment in order to keep other people off of the relief rolls. It might well be asked whether the Federal Government is justified in spending all of this money in Texas as long as the State itself is allowing to escape into the air wealth which, if turned into money, could provide comfort and security for every citizen in this State now in want, and in addition, could enable it out of its own resources to support a magnificent program of public works."

[fol. 596] STIPULATIONS

It was then stipulated in open court by plaintiff and defendants that at the hearing before the Railroad Commission beginning on November 19, 1935, being a hearing at which the order of December 10, 1935, was formulated, there were ten witnesses before the Commission, and that said hearing began on November 19, and that the greater part of three days was consumed in the hearing.

It was further stipulated that the Railroad Commission as a result of such hearing issued the order of December 10, 1935, regulating the Panhandle gas field and an additional order of the same date applicable to all districts in the State of Texas except the Panhandle district. That there are approximately 100 different gas fields in the State of Texas in addition to the Panhandle gas field, and that such additional order governed the production of gas in these different fields other than the Panhandle field.

Mr. Morgan: It is stipulated here in open court in connection with the introduction of House Bill 151 by the defendants that amendments, the effect of which was to make the validity of the waste prevention provision of the bill finally passed, to-wit, House Bill 266, depend upon the validity of the ratable production provisions were voted down

by each of the two houses of the Texas Legislature at the time they were considering said House Bill 266.

Mr. Cheek: It is further stipulated that House Bill 151 was drafted in the form in which it appears in the exhibit by the attorney and representative of the Texoma Natural Gas Company, and that the said attorney proposed the said bill to the said Forty-fourth Legislature for adoption.

Mr. Hill: It is further stipulated that Mr. S. A. L. Morgan assisted in writing House Bill 151 and such bill was introduced at his request.

[fol. 597] OFFER IN EVIDENCE

The affidavit of J. G. Dickinson was offered in evidence by complainants-appellees:

STATE OF TEXAS,
County of Potter:

J. G. Dickinson, a citizen of the State of Texas, residing at Amarillo, Texas, after being duly sworn, makes the following statement under oath:

1

Affiant is employed by Texoma Natural Gas Company, complainant in cause No. 550 in Equity, now pending in the District Court of the United States for the Western District of Texas, Austin Division, wherein said company is suing the members of the Railroad Commission of Texas and the Attorney General of Texas for the annulment as against it of certain orders of the Railroad Commission; that his position with said company is that of Superintendent of production; that his duties require him to keep in constant touch with practically all of the affairs of said company, particularly the problems concerning its properties and operations in the State of Texas and pipe line transportation and market conditions in particular relation to the quantity of gas marketed from the State of Texas. Affiant has been connected with said company in his present capacity from the organization of the company, and is thoroughly conversant with the facts covered by this affidavit.

2

Affidavit has in his office copies of substantially all the oil and gas leases owned by Texoma Natural Gas Company in Texas. He has examined Exhibit "A" attached to complainant's bill of complaint in this cause, which exhibit was prepared in affiant's office from the records and data con- [fol. 598] tained in affiant's office and under the direction of affiant, and the facts and figures reflected by said Exhibit "A" are true and correct as of the date of preparing complainant's bill.

Affiant has also examined the map marked Exhibit "B" and attached to complainant's bill of complaint, which map shows the extent and location on the ground of the main pipe line from Fritch, in Hutchinson County, Texas, to Gray, Oklahoma, and the lateral lines and gathering lines extending from Fritch, in Hutchinson County, Texas, to the various producing properties of said Company in Moore, Hutchinson, Carson and Gray Counties; that said Exhibit "B" was prepared in affiant's office under affiant's direction, and the same is correct and accurately reflects the location of the lines represented and platted thereon.

Affiant has also examined Exhibit "C" attached to complainant's bill of complaint, which represents the pipe line of Natural Gas Pipe Line Company of America extending from Gray, Oklahoma, to Joliet, Illinois. Said Exhibit was prepared in affiant's office under affiant's direction, and correctly and accurately represents the extent and location of such pipe line.

Affiant further states that the compressor stations indicated on said Exhibits "B" and "C" are correctly located at the points shown on said maps, and that said maps are in other details accurate and correctly reflect the facts shown on each of said maps.

3

Texoma at this time owns a total of 89 wells located in the West Panhandle field, capable of producing sweet natural gas. All of these wells are connected to its pipe line system and they together have a total natural flow at the present time of 1,389,968,000 cubic feet daily. Under the order of the Railroad Commission dated August 28th, 1935, [fol. 599] Texoma's daily allotment for September, 1935,

is 77,130,000 cubic feet. Texoma's present market outlet, of which the Railroad Commission had notice directly from it, is 117,632,000 cubic feet daily. Its allowable, therefore, is less by 40,502,000 cubic feet daily than its market outlet. Based on a field price of 4¢ per thousand cubic feet for gas measured on a pressure basis of 16.4 lbs. per square inch, the total cost to Texoma of purchasing such gas from outside producers would be approximately $1447.00 daily, or $528,155.00 annually. However, with the approach of winter, Texoma's market outlet for gas will be substantially increased, and the cost of purchasing this gas from outside producers will be correspondingly increased. In addition to such cost, Texoma would be required, as a practical matter, to build extensions from its now existing pipe lines to wells of outside producers from whom it would buy gas, and to install a meter at each well, in order to enable it to purchase gas from such producers, at a minimum cost to it of $235,689.00. In this connection affiant states that in order to make up the deficiency in its market requirements from other wells at the rate allowed under said order of the Railroad Commission, it would be necessary to make connections to 53 wells situated in closer proximity to Texoma's wells than to other lines, the owners of none of which wells have any investment whatever in Texoma's pipe lines, markets, or other property necessarily acquired by it in connection with the development of its markets. Texoma has no way of supplying this deficiency of more than 40,000,000 cubic feet of gas daily in order to meet its market requirements, except to purchase such gas at the tremendous cost above mentioned and after making the additional capital investment necessary to build pipe lines and connections and the installing of meters in making connections to said 53 wells.

[fol. 600] The only alternative Texoma would have would be to drill additional wells on its acreage, none of which wells are needed in order to meet its market requirements. It would cost an average of $20,000.00 to drill and complete each well, and it would be manifestly imprudent and disastrous from an economic standpoint for Texoma to drill the additional number of wells necessary to comply with the owners of the Railroad Commission, especially in view of the policy underlying such orders, which would result in a reduction of the daily allotment of each of the wells al-

ready completed by Texoma and connected with its pipe lines as the volume from Texoma's properties should be increased through the drilling of additional wells. It is manifestly impossible for Texoma to drill these additional wells in time to meet its present situation or in time to provide itself with the necessary gas to meet its market requirements pending a hearing of its suit against the Railroad Commission of Texas and the Attorney General of Texas now pending. It is likewise manifestly impossible to build the necessary pipe lines and connections to enable it to take its allowable from the 53 wells to which connections would have to be made; and if this order to enforced against Texoma pending a final decision on the case now pending, it would, as a practical proposition, have to reduce the deliveries to those purchasing gas from it, by the quantity of 40,502,000 cubic feet daily. This would bring about disastrous results from the standpoint of Texoma's commitments through which it has agreed to furnish gas to persons outside the State of Texas, and would inevitably result in the permanent loss to it of a very substantial part of its total market, such losses approximately the more than 40,000,000 cubic feet of gas daily which it would not be able to deliver under the terms of said order.

[fol. 601]

4

In said order above referred to the Railroad Commission gave no consideration or effect to the ownership by Texoma of approximately 150,000 acres of sweet gas producing lands in the so-called West Panhandle field on which no wells have been drilled; but considered only the tracts on which wells have been located. Texoma's reserves acquired by it as a means of supplying gas to its markets are therefore given no effect or consideration by the Commission, and same will be rendered absolutely valueless to Texoma until it expends enormous sums of money in the drilling of additional wells on its reserves, which wells are not needed in order to meet its current market requirements.

5

There is no open market for natural gas produced from the so-called West Panhandle field in the sense that there is any purchaser who is offering to buy gas produced from such field. The only markets for such gas are the private

markets of those pipe line companies which have constructed pipe lines connected with centers of population, principally outside the State of Texas, and who have negotiated with local distributing companies and consumers with the result that private market contracts have been obtained to the extent of the present outlet. These market contracts are the private property of various pipe line companies and affiliated producers, including Texoma and its affiliated company, Natural Gas Pipe Line Company of America.

6

It is unnecessary to drill a well on each 640 acres of land in the West Panhandle gas producing area in order to produce the gas therefrom in an efficient and non-wasteful manner. The method of allocation adopted by the Railroad Commission in its order of August 28th, 1935, renders it impossible for Texoma to make an equitable distribution [fol. 602] of its production among its various lessors, giving effect to the acreage under lease from each respective lessor. Affiant's experience in the gas business prompts him to say that the method of allocation adopted under these rules will involve Texoma in numerous disagreements, disputes and controversies with its lessors, with a possibility, if not a probability, of litigation.

7

Since natural gas can not be stored and held in reserve it must be produced from the wells and transported directly to the consumer as used. This inevitably results in a great fluctuation in the demand, which increases in colder weather and decreases in warmer weather. The uncertainty of the weather and the consequent uncertainty of the demand for natural gas makes it impossible for any producer of gas or any distributor of gas to anticipate accurately the demand for natural gas on any given date or during any given month. The limitation of the production from Texoma's leases in the so-called West Panhandle field to approximately 77,130,000 cubic feet each day, or any other arbitrary fixed quantity, will inevitably result in great uncertainty and confusion and to the great disadvantage of Texoma. It will never be in position to know with certainty that it can supply the needs of those to whom it has committed itself to deliver natural gas, unless

it be free to draw on its reserves to the extent of such requirements. It will be seriously handicapped in negotiating new contracts for the sale of gas, for the reason that it will not be in position to guarantee to a prospective purchaser that it will have available natural gas which it can with certainty commit itself to deliver to such prospective purchasers as needed. Such a state of affairs will put Texoma at the mercy of those from whom it would have to negotiate a purchase of gas to supply its market outlets and commitments, subjecting it to extortionate and unrea- [fol. 603] sonable demands for price and extremely onerous and burdensome terms and conditions. Texoma could not force any outside producer to sell it gas except upon the terms demanded by such producer; and the very nature of the gas business makes it utterly impracticable and impossible to conduct its business in an economic and prudent manner under such conditions of uncertainty and chaos that would inevitably result from the operation of such orders.

8

Affiant is familiar with the general conditions throughout the entire Panhandle oil and gas producing reservoir. There are more than 2000 oil wells producing oil from such reservoir, and there are numerous other wells producing gas which is being used for gas lift in the production of oil, and numerous other wells producing practically no oil, from which enormous quantities of gas are being produced each day and run to natural gasoline plants, where the gasoline is extracted from the natural gas and the residue is burned as carbon black or wasted into the air. Enormous quantities of gas are being produced from the general reservoir by those operating oil wells and casinghead gas wells, which is used for other purposes then domestic and industrial fuel. The volume of gas so produced and used greatly exceeds the volume produced and used for domestic and industrial fuel. This excessive production of gas used for other purposes than domestic and industrial fuel, or wasted into the air, has continued over a period of eight or nine years, with the result that numerous low pressure areas have occurred in different portions of the general reservoir, particularly the oil-producing areas. Affiant's study of the situation enables him to state within his knowledge that the existence of these low pressure areas has caused, and

is causing, an enormous drainage of gas from the general [fol. 604] sweet gas producing area in which substantially all of Texoma's properties are located. Affiant has caused a study of the rock pressures of the various areas in which Texoma's properties are located to be made under his direction, from which he states that the rock pressures underlying Texoma's leases have fallen or declined at a rate much more rapid than that at which they would have declined as a result of the taking of gas by Texoma and the other pipe line companies which are engaged in producing and transporting gas for use as domestic and industrial fuel. This means that Texoma is sustaining enormous losses through drainage to and toward the areas of low pressure above referred to. The only protection available to Texoma against such drainage is to produce its own gas from its own leases as rapidly as it can develop markets therefor.

9

The operation of said orders would doubtless result in the drilling of additional gas wells by those owning leases capable of producing gas and who have no present outlet for their gas. This would inevitably result in a reduction of the allotment to Texoma of the natural gas which it would be permitted to produce from its own properties under the operation of the present statutes and the order of the Railroad Commission above referred to; and the injuries and losses now being sustained by Texoma, and which would be sustained to an increased extent if said statute and orders were enforced against it, would be gradually and substantially increased as additional wells should be drilled by such outside owners and producers.

10

Affiant states that he is familiar with the terms and covenants of the various oil and gas leases conveying oil and gas leasehold estates to Texoma Natural Gas Company; that each of said leases is for a fixed term of years, commonly referred to in oil and gas parlance as the "pri- [fol. 605] mary term", under a clause reading substantially as follows:

"'This lease shall remain in force for a term of — years, and as long thereafter as oil, gas, casinghead gas, casinghead gasoline, or any of them, is or can be produced."

Some of said leases contain no reference to casinghead gas or casinghead gasoline in such clause. The primary term of said leases ranges from three to ten years. In this connection affiant states that the oil and gas lease form, marked Exhibit "A" to the affidavit of J. G. Dickinson, is fairly typical of all the oil and gas leases owned and held by Texoma Natural Gas Company covering its approximately 200,000 acres of land in the Panhandle of Texas; that said leases vary as to some of the terms and covenants, but there are no substantial variations from the terms and covenants set forth in said form of lease contract.

11

Affiant represents that since complainant, Texoma Natural Gas Company, has been delivering gas from its properties in the State of Texas to the pipe line of Natural Gas Pipe Line Company of America, at Gray, Oklahoma, the market conditions in the remote cities and towns where complainant has arranged for markets, as shown by the affidavit of Floyd C. Brown heretofore prepared for use as evidence in this cause, have become increasingly difficult and unsatisfactory from the standpoint of Texoma Natural Gas Company. Texoma Natural Gas Company has an enormous reserve of natural gas which it is entitled to produce and market as rapidly as a market outlet can be found for same. The pipe line constructed from Fritch, Texas, to Gray, Oklahoma, and owned by complainant, as well as the pipe line from Gray, Oklahoma, to Joliet, Illinois, is capable of transporting approximately 175,000,000 cubic feet of gas daily; but Texoma Natural Gas Company and Natural Gas Pipe Line Company of America have never been able to maintain a market outlet for such a quantity of [fol. 606] natural gas; that the business conditions during the period of what is now commonly called the depression have been responsible in some measure for this situation, but the most important factor contributing to the difficulties of finding a market outlet for the natural gas belonging to said Texoma Natural Gas Company is the increasingly stubborn competition on the part of those mining and transporting fine coal as a competitive fuel. In this connection affiant shows that recently the United States Interstate Commerce Commission has granted, by order No. 11,028 on the application of a number of railway carriers,

drastic rate reductions for transportation of coal from mining districts in Illinois, Indiana and Western Kentucky to points in Nebraska, Iowa, Minnesota, Kansas, Missouri and South Dakota, and all intermediate points, actually served at the present time by pipe lines transporting natural gas, while allowing the same carriers to maintain higher rates to intermediate points not served by such pipe lines; that said order was expressly based on representations by said railway carriers that such reduced rates were desirable from their standpoint as a means of competing with natural gas as a fuel for domestic use and for industrial uses, and said rates expressly discriminating against those towns and cities not served by pipe lines distributing natural gas were expressly allowed for the purpose of permitting the coal operators and railroads to produce and transport coal into such cities and towns where natural gas is served at highly competitive low prices, all of which has resulted in making it increasingly difficult for Texoma Natural Gas Company and its affiliated company to find a market outlet for its natural gas at prices that would yield them a reasonable profit. In this connection affiant states that competing railway companies and coal operators have intervened in a number of instances where Texoma Natural Gas Company and its said affiliated company have been [fol. 607] negotiating with local utility companies in various cities along the pipe line of Natural Gas Pipe Line Company of America and in the vicinity of such pipe lines, and have influenced the city councils or other administrative bodies of such cities and towns to refuse to grant such utilities a franchise to introduce natural gas into such towns and cities. In this connection affiant states that Texoma Natural Gas Company and its said affiliated company are constantly fighting for the extension of their markets and for the retention of markets already obtained, at great cost and sacrifice to both of said companies.

12

Affiant further states that he has carefully read complainant's amended bill of complaint filed in the above entitled and numbered cause, and that the statements of fact therein contained are, within affiant's knowledge, true and correct as of the date of the filing of said bill of complaint, except in such instances where such amended bill of com-

plaint shows that the figures and facts are based on information and belief, and in such instances affiant represents that he based the allegations on information that was the most reliable that could be obtained from such sources as the records and files of the Railroad Commission of Texas and Texoma Natural Gas Company and other companies producing natural gas in the Panhandle of Texas, and from the oil companies producing oil and gas in the same area.

(Signed) J. G. Dickinson.

[fol. 608] OFFER IN EVIDENCE

The affidavit of F. L. Chase, was offered in evidence by defendants-appellants:

STATE OF TEXAS,
County of Dallas:

Before me, the undersigned authority, a Notary Public in and for Dallas County, Texas, personally appeared F. L. Chase, who after being by me duly sworn upon his oath says:

My name is F. L. Chase. I am Vice-President and Operating Manager of Lone Star Gas Company. This Company, at the present date, owns and operates seventy-three (73) producing wells capable of producing sweet natural gas in merchantable and commercial quantities in Wheeler County. Said company owns outright title to the above wells and has been producing gas therefrom over a considerable period of time, and uses the gas from the aforesaid wells to supply its market for light and fuel, after the natural gasoline content has been stripped therefrom. The wells owned by the Lone Star Gas Company have a potential producing capacity of approximately one billion, five hundred twenty-four million, nine hundred four thousand (1,524,904 M) cubic feet per day. The aforesaid wells owned by Lone Star Gas Company, if producing at twenty-five (25%) per cent of their potential capacity, could more than supply all the market needs of Lone Star Gas Company from the Eastern Panhandle field.

The Lone Star Gas Company owns a pipe line system in Wheeler County, which extends from said county to the

various parts of Central, South and North Texas, in order to supply the market of said company for light and fuel. Since 1927 the Lone Star Gas Company has operated the aforesaid pipe line system and in the course of its opera- [fol. 609] tion has been purchasing gas from producers located in the Eastern Panhandle field in Wheeler County in addition to producing gas from its own wells to supply its market. It has been the policy of the Lone Star Gas Company to buy gas from other producers in Wheeler County and in other fields to which its system extends for the purpose of enabling all producers to have a share of the market in the respective fields. Since the aforesaid year of 1927 the purchases of gas from the various producers in the Wheeler County field and the production of gas from its own wells have been made on a ratable basis by the Lone Star Gas Company.

At the present time the Lone Star Gas Company is purchasing sweet gas from seventy-one (71) wells in Wheeler County, Texas, not owned by it. In order to purchase said gas from the said seventy-one (71) wells owned by other operators and produce gas from the seventy-three (73) wells owned by it, the Lone Star Gas Company has constructed and now has in operation a gathering system located in Wheeler County, Texas, which contains approximately ninety-seven (97) miles of pipe line of various sizes. The gathering system was constructed for the purpose of enabling the Lone Star Gas Company to share its market with the various wells owned by other producers in the field, as well as for the purpose of taking gas from its own wells. The cost of the construction of said gathering system and the making of the various connections to its own wells and the wells of other producers, has been borne solely by the Lone Star Gas Company. The program of purchasing and producing gas ratably from wells tied on to the Lone Star Gas Company's system has served to provide a market outlet for a great many producers who would otherwise have no market for their gas, and has likewise [fol. 610] proven to be a satisfactory policy insofar as the Lone Star Gas Company is concerned.

The Regular Session of the 44th Legislature enacted a gas conservation law, known as H. B. No. 266, which became effective as respects sweet gas, on August 1, 1935. Pursuant

to the terms of said law the Railroad Commission of the State of Texas on July 20, 1935, promulgated a proration order prorating the sweet gas production from wells in the Eastern Panhandle field, including Wheeler County. The Theory of the gas conservation law, as well as said proration order of said Railroad Commission, conforms generally to the program that the Lone Star Gas Company has heretofore followed with respect to purchasing and producing gas ratably in the Wheeler County area. From our experience we find that the proration of gas on some equitable basis is fair. Under the provisions of said proration order the Lone Star Gas Company is permitted to produce its seventy-three (73) wells in accordance with said order, which provides an allowable production for each well, and we are likewise permitted to purchase from the seventy-one (71) wells owned by other operators in said area in accordance with the allowable production permitted under the terms of the aforesaid order. It appears that after our market needs have been supplied, that under the allowable production for the aforesaid wells, permitted by the terms of the above proration order of July 20, 1935, there remains an excess amount of gas that could still be produced from the seventy-three (73) wells owned by Lone Star Gas Company, and the seventy-one (71) wells from which the Lone Star Gas Company purchases gas, of twenty-six million, five hundred thousand (26,500 M) [fol. 611] cubic feet of gas per day, for which there is no market demand on Lone Star Gas Company's system at this time. The Lone Star Gas Company's needs for the month of August are approximately seventeen million (17,000 M) cubic feet of gas per day from the Wheeler County or Eastern Panhandle field, and the allowables from the seventy-three (73) wells owned by the Lone Star Gas Company and the seventy-one (71) wells from which said company purchases gas, under the terms of the aforesaid order, amounts to forty-three million, five hundred thousand (43,500 M) cubic feet of gas per day.

A portion of Lone Star Gas Company's gathering system in Wheeler County is located in Blocks 17, 23 and 24 out of the H. & G. N. R. R. Co. Survey in said County, being more specifically described as located in Sections 1 to 5 inclusive, and Sections 19, 20, 21 and 22 of said Block 24, and Sections 89, 90, 91, 92 and 93 of said Block 17,

and Sections 129, 130 and 106 of said Block 23, all of which system fully appears and is described as a red line on a map identified herewith and referred to as Exhibit "A". This portion of the gathering system herein described consists of approximately 11.81 miles of ten inch steel pipe line, approximately 8.25 miles of six inch steel pipe line and approximately .31 miles of four inch steel pipe line, aggregating an approximate total of 20.37 miles of steel pipe line.

Adjacent to and in close proximity with the above described gathering system are twelve (12) wells producing sweet natural gas owned by the Texas Panhandle Gas Company, as well as the gathering system of said Texas Panhandle Gas Company, all of which more fully appears and is shown upon the map above referred to and marked Ex-
[fol. 612] hibit "A", the approximate location of the pipe lines belonging to said Texas Panhandle Gas Company being indicated upon the map by a blue pencil line, and the wells owned by said company being encircled with a blue pencil mark.

Connected to the above described portion of the gathering system of Lone Star Gas Company and close to the pipe lines of the Texas Panhandle Gas Company, are eighteen (18) wells producing sweet gas from which the Lone Star Gas Company purchases gas under the terms of gas purchase contracts, said wells being encircled in orange pencil on the map heretofore referred to as Exhibit "A". Pursuant to the terms of said contracts the Lone Star Gas Company and the Vendors are given the privilege of cancelling said contracts upon giving sixty (60) days written notice to such effect. Under the provisions of the recent proration order of July 20, 1935, issued by the Railroad Commission of Texas, the Lone Star Gas Company is permitted and allowed to produce from the aforesaid eighteen (18) wells, the amount of five million, three hundred thousand (5,300 M) cubic feet of gas per day. With respect to said wells, Lone Star Gas Company is willing to permit the Texas Panhandle Gas Company to purchase the gas from said wells under any contracts that said company may be able to negotiate for the purchase of said gas after the cancellation of the existing contracts, and in this connection the Lone Star Gas Company signifies and states that it is willing to cancel said contracts in the event the Texas Pan-

handle Gas Company desires it to do so and said company will purchase the gas from such wells. In addition to the eighteen (18) wells herein described and referred to, Lone Star Gas Company owns thirty (30) sweet gas producing [fol. 613] wells which are located in the blocks and sections hereinabove set out, where the aforesaid portion of Lone Star Gas Company's gathering system is likewise located and which is adjacent to and in close proximity with the pipe line system owned by the Texas Panhandle Gas Company, such wells being indicated upon the map heretofore referred to as Exhibit "A" encircled with a green pencil. Under the recent order of the Railroad Commission of the State of Texas the Lone Star Gas Company is permitted to produce from said thirty (30) wells, seven million, two hundred thousand (7,200 M) cubic feet of gas per day, and Lone Star Gas Company is willing to permit the Texas Panhandle Gas Company to purchase from it all of such gas from all of said thirty (30) wells at the prevailing market price in the field in accordance with the terms of contracts now being used by Lone Star Gas Company to purchase gas from other producers in said field.

Should the Texas Panhandle Gas Company purchase gas from the aforesaid eighteen (18) wells under contracts negotiated by it for the purchase of such gas after the cancellation of the existing contracts, and should the Texas Panhandle Gas Company purchase gas from the aforesaid thirty (30) wells at the prevailing market price, in accordance with the terms of contracts now being used by Lone Star Gas Company to purchase gas from other producers in said field, said company will have available to supply its market the amount of twelve million, five hundred thousand (12,500 M) cubic feet of gas per day.

Also, the Railroad Commission's allowable schedule issued in connection with its order of July 20, 1935, discloses [fol. 614] that there are three (3) sweet gas producing wells located in Block 27 of the H. & G. N. R. R. Co. Survey in Wheeler County, Texas, whose total daily allowable production under said order is five hundred eighty-six thousand (586 M) cubic feet of gas per day, said wells being designated on the schedule as Whittington's Nos. 1, 2 and 3, Laycock wells. The aforesaid wells are located in the vicinity of and adjacent to the pipe line owned by Texas Panhandle Gas Company and insofar as the schedule of the

Railroad Commission is concerned, discloses said wells do not now have a connection.

Furthermore, the Lone Star Gas Company is willing to permit the Texas Panhandle Gas Company to lay its own gathering system to the mouth of each of the above referred to forty-eight (48) wells owned by it and upon which it has gas purchase contracts, and to take gas therefrom in the manner hereinabove mentioned, or the said Lone Star Gas Company will, on some fair and equitable basis, negotiate with the Texas Panhandle Gas Company whereby said company can use the gathering system belonging to the Lone Star Gas Company for the purpose of purchasing said gas to supply its needs; or the Lone Star Gas Company is likewise willing to sell gas to the Texas Panhandle Gas Company at such points on its gathering or pipe line system selected by the Texas Panhandle Gas Company and upon the terms and at a price to be mutually agreed upon.

In the event the said Texas Panhandle Gas Company elects to make gas purchase contracts at the prevailing market price in accordance with the terms of contracts now being used by Lone Star Gas Company to purchase gas from other producers in said field, on the thirty (30) wells [fol. 615] owned by the Lone Star Gas Company, and furthermore elects to make gas purchase contracts with the owners of the eighteen (18) wells connected to Lone Star Gas Company's system, pending the carrying out of the necessary arrangements on the part of Texas Panhandle Gas Company to take over or make gas purchase contracts on the aforesaid wells, Lone Star Gas Company will sell gas to the Texas Panhandle Gas Company, at some connecting point to be selected by said Texas Panhandle Gas Company on its gathering system and at a price and upon the terms to be mutually agreed upon.

In addition to all of the above, in the event the Texas Panhandle Gas Company cannot supply all of its needs by the exercise of any or all of the alternative offers hereinabove made, the Lone Star Gas Company, under the provisions of the aforesaid order of the Railroad Commission, still has an excess of approximately nine million five hundred thousand (9,500 M) cubic feet of gas per day allowable, over and above its present market demand, from wells owned by it and from which Lone Star Gas Company purchases gas under gas purchase contracts, and said Lone

Star Gas Company is willing to negotiate with the Texas Panhandle Gas Company whereby said company may purchase additional gas, if needed, at a price and upon terms and conditions to be mutually agreed upon.

Affiant further states that prior to the making of this affidavit he communicated with Logan C. Cary, representative of Texas Panhandle Gas Company, and did, in a general way, make known Lone Star Gas Company's willingness to supply said company's requirements for gas under [fols. 616 & 617] the proration order issued by the Railroad Commission of the State of Texas, July 20, 1935, in the manner and under the terms hereinabove set forth.

The affiant makes this affidavit for the purpose of disclosing the position of the Lone Star Gas Company with respect to supplying gas to those in need of same to meet their market demand, as well as to point out and present the information hereinabove set out.

(Signed) F. L. Chase.

Sworn to and subscribed before me, on this the 12th day of August, A. D. 1935. (Signed) Roy E. Pitts, Notary Public in and for Dallas County, Texas. (Seal.)

[fol. 618]

IN UNITED STATES DISTRICT COURT

[Titles omitted]

Record of Exhibits

COMPLAINANTS' EXHIBITS

EXHIBIT 3

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Summary

(By Counties)

County	No. Wells	Acres Held by Well	Avg. Rock. Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Carson	135	138,881.45	352.6*	265,162.259	1,955
Gray	36	7,970.9	309**	58,417,853	7,329
Hartley	4	76,757.04	423.7	71,866	1.25
Hutchinson	25	9,885.38	339.1***	67,528,111	6,831
Moore	58	119,922.89	402.6	68,152,293	708
Potter	35	169,646.31	410.4	70,213,072	467
Total	293	523,063.97	364.5****	529,545.454	1,157

*Average for 133 wells
** " " 35 "
*** " " 21 "
**** " " 286 "

[fol. 619]

EXHIBIT No. 3—Continued

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Summary (By Companies)

Company	County	No. Wells	Acres Held by Well	Avg. Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Texoma Natural Gas Co.	Carson	50	36,446	318.7	67,204,389	2,005
"	Gray	14	4,107.9	294.6(1)	11,371,865	2,769
"	Hutchinson	7	3,023.3	312.5(2)	3,756,451	1,243
"	Moore	23	38,351.24	404.1	16,475,784	475
Total Texoma		94	81,928.44	336.8(3)	98,808,489	1,312
Cities Service Gas Co.	Carson	50	90,099.9	375	173,207,199	1,922
"	Gray	14	2,212	323.5	40,073,159	18,116
Total Cities Service		64	92,311.9	363.7	213,280,358	2,310
Canadian River Gas Co.	Carson	4	4,080	374.2	4,142,920	1,015
"	Hartley	4	76,757.04	423.7	71,866	1.25
"	Hutchinson	14	4,399.08	342.9(4)	51,627,649	11,736
"	Moore	24	77,401.65	397.2	44,030,123	.765
"	Potter	26	165,714.91	409.7	65,597,469	448
Total Canadian River		72	328,352.68	392(5)	165,470,027	613
Red River Gas Co.	Carson	5	2,548.55	405.6	3,046,544	1,195
"	Hutchinson	1	2,200	362	9,833,440	4,470
"	Moore	1	640	414	3,054,815	4,773
"	Potter	5	2,491.4	408.3	2,718,544	1,091
Total Red River		12	7,879.95	403.7	18,653,343	2,367

North American O&G Interstate Prod. Co.	Carson	11	2,007	339.7(6)	9,749,319	5,765
"	Gray	6	971	303.6	5,635,923	6,949
"	Moore	1	160	384	.....	.....
Total North American & Interstate Prod. Co.		18	3,138	329.5(7)	15,385,242	6,149
Texas-Interstate Pipe Line (Panhandle Eastern)	Carson	11	3,280	388.5	6,470,333	1,973
"	Hutchinson	3	263	351	2,310,571	8,785
"	Moore	8	3,366	412	4,236,078	1,258
"	Potter	4	1,440	417.5	1,897,059	1,317
Total Texas-Interstate Pipe Line		26	8,349	396	14,914,041	1,786
Central State P&L	Carson	2	220	323	1,088,270	4,947
"	Gray	2	680	317.5	1,336,906	1,966
Total Central States		4	900	320.2	2,425,176	2,695
[fol. 620]						
Producers Utility Corp.	Carson	2	200	365(8)	253,285	1,266
Total Producers Utility Corporation		2	200	365(8)	253,285	1,266
Panhandle Power & Light	Moore	1	4	430	355,493	88,873
Total Panhandle Power & Light		1	4	430	355,493	88,873
Total All Companies		293	523,063.97	364.5(9)	529,545,454	1,157

(1) Average for 13 wells
(2) " " 4 "
(3) " " 90 "
(4) " " 13 "
(5) " " 71 "
(6) " " 10 "
(7) " " 17 "
(8) " " 1 "
(9) " " 286 "

EXHIBIT 3—Continued

[fol. 621]

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Texoma Natural Gas Company

Carson County

Well Name & No., Sec. & Blk.	Acres Held By Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
M. C. Burnett 1-T, Sec. 90, Blk. 5	880	305	739,746	841
M. C. Burnett 5-T, Sec. 89, Blk. 5	880	304	1,401,110	1,592
S. B. Burnett 1-G, Sec. 118, Blk. 5	1,360	283	1,334,872	982
S. B. Burnett Est. "B" 1-G Sec. 21, Blk. 5	160	404	2,122,607	13,266
S. B. Burnett Est. "C" 1-G, Sec. 35, Blk. 4	160	397	2,793,211	17,458
S. B. Burnett 2-G, Sec. 102, Blk. 5	1,360	365	1,040,387	765
S. B. Burnett 11-G, Sec. 106, Blk. 5	1,360	265	183,119	134
S. B. Burnett 19-G, Sec. 106, Blk. 5	1,360	255	589,299	433
S. B. Burnett Est. 1-P, Sec. 54, Blk. 4	560	389	1,882,223	3,361
S. B. Burnett 1-S, Sec. 94, Blk. 5	400	382	1,339,106	3,348
S. B. Burnett 1-T, Sec. 64, Blk. 5	3,640	400	2,777,305	763
S. B. Burnett Est. 1-G, Sec. 91, Blk. 5	320	316	502,445	1,570
J. J. Crutchfield 1-T, Sec. 29, Blk. 4	1,760	389	3,013,404	1,712
A. J. Dauer 1-E, Sec. 73, Blk. 4	480	298	902,720	1,881
A. J. Dauer 1-G, Sec. 74, Blk. 4	1,560	301	1,894,262	1,214
A. J. Dauer 1-T, Sec. 81, Blk. 4	320	300	1,606,866	5,021
G. R. Garner et al "A" 2-T, Sec. 96, Blk. 4	320	290	2,098,074	6,556
W. D. Jordan et al 1-E, Sec. 94, Blk. 4	160	279	780,425	4,878
W. D. Jordan et al 1-T, Sec. 83, Blk. 4	520	286	2,510,338	4,828
Mineral Investing Corp. 1-T, Sec. 60, Blk. 4	2,080	313	1,531,017	736
E. J. Moore 1-T, Sec. 21, Blk. 7	180	388	733,124	4,072
J. G. Bednorz 1-T, Sec. 2, Blk. 4	100	378	568,280	5,683
N. A. Cobb 1-T, Sec. 202, Blk. 3	100	269	1,170,224	11,702
W. E. Cobb 1-G, Sec. 202, Blk. 3	160	259	1,711,563	10,697
Jno. Gores 1-G, Sec. 42, Blk. 4	320	291	797,575	2,492
Jno. Gores 1-S, Sec. 42, Blk. 4	320	285	1,269,273	3,966

H. Haiduk 1-G, Sec. 21, Blk. 4	400	359	828,309	2,071
J. S. Harrison 1-T, Sec. 40, Blk. 4	480	310	1,996,909	4,160
C. Kalka 1-T, Sec. 43, Blk. 4	160	271	1,173,208	7,333
J. C. McConnell 1-E, Sec. 66, Blk. 4	80	249	873,241	10,916
J. C. McConnell "B" 1-T, Sec. 185, Blk. 3	50	249	1,050,963	21,019
R. S. McConnell 1-T, Sec. 46, Blk. 4	80	249	1,258,531	15,732
R. McCoy 1-T, Sec. 41, Blk. 4	240	293	950,341	3,960
O. M. McEwen 1-G, Sec. 204, Blk. 3	236	342	1,553,472	6,583
M. J. McLaughlin 1-M, Sec. 61, Blk. 4	2,070	296	3,222,882	1,557
M. J. McLaughlin 2-M, Sec. 72, Blk. 4	2,070	287	1,637,659	791
P. C. Ledrick 1-S, Sec. 239, Blk. B-2	240	358	639,018	2,663
C. A. Noel 1-T, Sec. 26, Blk. 4	160	362	635,427	3,971
H. Schafer 1-T, Sec. 68, Blk. 4	320	265	1,115,370	3,486
H. Schafer 2-S, Sec. 64, Blk. 4	960	267	1,537,788	1,602
H. Schafer 3-S, Sec. 63, Blk. 4	960	277	3,791,866	3,950
H. Schafer 4-S, Sec. 48, Blk. 4	960	283	1,283,107	1,337
H. Schafer 5-S, Sec. 69, Blk. 4	960	272	3,118,070	3,248

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Ben Urbanczyk 1-G, Sec. 19, Blk. 4	1,120	379	1,344,413	1,200
J. H. Urbanczyk 1-T, Sec. 25, Blk. 4	1,000	353	1,329,646	1,329
L. T. Urbanczyk 1-T, Sec. 4, Blk. 4	160	382	571,594	3,572
S. B. Burnett Est. "D" 1-G, Sec. 34, Blk. 5	640	402	*	.....
J. J. Crutchfield 1-E, Sec. 37, Blk. 4	2,240	392	*	.....
Mineral Investing Corp. 2-T, Sec. 52, Blk. 4	.....	380	*	.....
S. B. Burnett 1, Sec. 93, Blk. 5	40	271	*	.....
Total Carson County 50 Wells	36,446	318.7 Avg.	67,204,389	2,005

*Not connected.

Gray County

H. M. Barrett (Harrah) 1-G, Sec. 131, Blk. 3	160	301	1,500,304	9,377
H. M. Barrett (Harrah) 1-T, Sec. 131, Blk. 3	160	307	875,717	5,473
J. B. Barrett 1-T, Sec. 130, Blk. 3	160	.....	155,989	975
J. S. Bell "B" 1-E, Sec. 111, Blk. 3	80	288	524,963	6,562
C. W. Bradford 1-S, Sec. 118, Blk. B-2	320	242	114,887	359
J. W. Cantrell 1-E, Sec. 136, Blk. 3	160	281	617,776	3,861

EXHIBIT 3—Continued

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Texoma Natural Gas Company

Gray County—Continued

Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
E. M. Osborne 1–T, Sec. 108, Blk. 3	160	295	419,447	2,622
Mary J. Purvis 1–T, Sec. 151, Blk. B–2	400	319	409,812	1,025
H. B. Ruscoe 1–E, Sec. 111, Blk. 3	80	285	519,635	6,495
C. C. Yowell 1–E, Sec. 213, Blk. B–2	640	352	523,050	817
L. A. Aebersold 1–G, Sec. 180, Blk. 3	1,280	340	2,762,695	2,158
A. Frashier 1–E, Sec. 177, Blk. 3	300	276	1,305,147	4,350
S. McCullough 1–E, Sec. 153, Blk. 3	127.9	295	647,102	5,059
Mary Wall 3–E, Sec. 161, Blk. 3	80	250	995,341	12,442
Total Gray County 14 Wells	4,107.9	294.6**	11,371,865	2,769

**Average for 13 wells.

Hutchinson County

E. B. Johnson 1, Sec. 2, Blk. Y–2	583.30	346	777,832	1,334
E. B. Johnson (Cart) 1–P, Sec. 1, Blk. Y–2	440	348	988,921	2,248
E. B. Johnson "A" 1–G, Sec. 1, Blk. Y–2	640	351	1,896,114	2,963
J. M. Sanford "A" 1–G, Sec. 82, Blk. 46	160	.....	23,657	148
J. M. Sanford 1–G, Sec. 75, Blk. 46	520	.....	23,658	45
J. M. Sanford "B" 1–G, Sec. 2, Blk. X03	160	205	22,611	141
J. M. Sanford 2–G, Sec. 81, Blk. 46	520	.....	23,658	45
Total Hutchinson Co. 7 Wells	3,023.30	312.5***	3,756,451	1,243

***Average for 4 Wells.

Moore County

R. S. Coon 1–M, Sec. 149, Blk. 44	2,560	417	462,049	180
R. S. Coon 2–M, Sec. 151, Blk. 44	2,560	424	428,166	167
R. S. Coon 3–M, Sec. 191, Blk. 44	2,560	424	568,164	222
R. S. Coon 4–M, Sec. 103, Blk. 44	2,560	419	1,008,366	394
R. S. Coon-J. T. Snead 1–M, Sec. 8, Blk. 6–T	2,560	423	676,099	264
B. Dore 1–G, Sec. 312, Blk. 44	640	420	912,021	1,425
O. E. Gober 1–S.P., Sec. 16, Blk. M–1	1,760	397	1,613,712	917
Mary Haas 1, Sec. 30, Blk. PMc	1,280	419	401,602	314
D. C. Jester 1–T, Sec. 14, Blk. 6–T	240	421	539,307	2,247
C. L. Killgore 1–G, Sec. 22, Blk. PMc	831.07	419	446,502	537
C. L. Killgore 2–G, Sec. 29, Blk. PMc	831.07	412	1,072,285	1,290
J. W. Moore et al 1–P, Sec. 14, Blk. 44	1,788.4	413	395,638	221
J. T. Sneed 1–P, N. Jones Sur	2,000	370	1,062,744	531
J. T. Sneed 2–P, Sec. 77, Blk. 3, G&M Sur	2,000	357	3,997,630	1,999
J. T. Sneed 3–P, M. George Sur	2,000	352	878,356	438
J. T. Sneed 4–P, Sec. 54, Blk. 3, G&M Sur	2,000	347	261,851	131
J. T. Sneed 5–P, Sec. 7, Blk. B–12, D&P Sur	2,000	371	52,558	26
W. H. Taylor 1–G, Sec. 21, Blk. M–1	1,422	412	136,851	96
W. H. Taylor 1–P, Sec. 244, Blk. 3–T	320	423	411,574	1,286
Terry Thompson 1–P, Sec. 61, Blk. 44	2,751.7	414	1,150,309	418
L. J. Haile 1–M, Sec. 1, Blk. 1–PD	1,280	416	*	.....
J. T. Sneed 6–P, Sec. 38, Blk. 6–T	640	405	*	.....
G. L. Troutman 1–S.P., Sec. 273, Blk. 44	1,767	420	*	.....
Total Moore County 23 Wells	38,351.24	404.1 Avg.	16,475,784	475
Total All Counties 94 Wells	81,928.44	336.8**	98,808,489	1,312

*Not connected.

**Average for 90 Wells.

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EXHIBIT 3—Continued

West Panhandle Field

Details of Gas Production—Gas Pipline Companies

Cities Service Gas Company

Carson County

Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Burnett 1–A, Sec. 55, Blk. 4	3,194	398	6,223,631	1,949
Burnett 2–A, Sec. 23, Blk. 5	3,194	402	3,829,213	1,199
Burnett 3–A, Sec. 44, Blk. 5	3,194	401	3,490,468	1,093
Burnett 4–A, Sec. 45, Blk. 5	3,194	400	5,392,457	1,688
Burnett 5–A, Sec. 63, Blk. 5	3,194	397	6,690,570	2,095
Burnett 6–A, Sec. 62, Blk. 5	3,194	400	6,990,053	2,188
Burnett 7–A, Sec. 49, Blk. 5	3,194	402	7,676,752	2,403
Burnett 8–A, Sec. 40, Blk. 5	3,194	401	4,555,924	1,426
Burnett 9–A, Sec. 50, Blk. 5	3,194	398	4,048,659	1,268
Burnett 10–A, Sec. 52, Blk. 5	3,194	407	3,856,293	1,207
Burnett 16–A, Sec. 104, Blk. 5	3,194	285	2,334,509	731
Burnett 17–A, Sec. 78, Blk. 4	3,194	302	2,617,669	820
Burnett 18–A, Sec. 96, Blk. 5	3,194	370	5,143,635	1,610
Burnett 19–A, Sec. 89, Blk. 5	3,194	303	3,449,450	1,080
Burnett 21–A, Sec. 120, Blk. 5	3,194	306	2,104,077	659
Burnett 22–A, Sec. 98, Blk. 5	3,194	387	2,683,651	840
Burnett 25–A, Sec. 100, Blk. 5	3,194	392	1,537,455	481
Burnett 26–A, Sec. 78, Blk. 5	3,194	401	2,491,273	780
Burnett 27–A, Sec. 76, Blk. 5	3,194	400	2,361,160	739
Burnett 29–A, Sec. 83, Blk. 5	3,194	385	3,246,472	1,016
Burnett 11, Sec. 76, Blk. 4	880	314	4,069,515	4,624
Burnett 12, Sec. 35, Blk. 4	1,360	395	3,872,971	2,848
Burnett 13, Sec. 93, Blk. 5	320	357	4,203,961	13,137
Burnett 14, Sec. 12, Blk. 4	2,520	402	2,446,033	971

Burnett 15, Sec. 4, Blk. 5	1,280	407	714,380	558
Burnett 20, Sec. 20, Blk. 5	80	402	5,385,736	67,321
Burnett 23, Sec. 25, Blk. 5	80	405	3,108,376	38,855
Burnett 24, Sec. 42, Blk. 5	320	403	3,060,192	9,563
Bennett 1, Sec. 6, Blk. 5, B&B	160	406	1,432,020	8,950
Crutchfield 1, Sec. 28, Blk. 4	160	381	3,128,702	19,554
Dauer 1-B, Sec. 73, Blk. 4	160	292	4,411,740	27,573
C. E. Deahl 1, Sec. 21, Blk. Y-2	693.3	371	1,125,142	1,623
C. E. Deahl 2, Sec. 2, BS&F	693.3	365	1,344,653	1,939
C. E. Deahl 3, Sec. 23, Blk. Y-2	693.3	403	6,385,332	9,210
G. W. Deahl 1, Sec. 3, Blk. 5	4,240	404	2,469,422	582
G. W. Deahl 2, Sec. 25, Blk. Y-2	4,240	404	2,649,227	625
W. H. Fuqua 1, Sec. 17, Blk. 3	1,445	405	2,819,628	1,951
W. H. Fuqua 2, Sec. 19, Blk. 3	1,445	407	4,008,120	2,774
W. H. Fuqua 3 Sec. 18, Blk. 3	1,445	407	1,970,672	1,364
W. H. Fuqua 4, Sec. 6, Blk. S	1,445	403	275,966	191
Lane 1, Sec. 72, Blk. 4	160	293	4,225,632	26,410
Lane 2, Sec. 62, Blk. 4	160	287	4,696,720	29,355
Noel 1, Sec. 41, Blk. 4	160	304	5,030,879	31,443
D. Pope 1, Sec. 242, Blk. B-2	160	358	5,623,246	35,145
Sheridan 1, Sec. 243, Blk. B-2	160	359	5,595,690	34,973
Texas 1-A, Sec. 60, Blk. 4	160	304	5,517,092	34,482
Fields 1, Sec. 13, Blk. 7	640	407	196,704	307
White Deer 1, Sec. 51, Blk. 4	160	357	1,421,702	8,886
Whittemore 1, Sec. 14, Blk. 7	640	406	26,110	41
Poling 1, Sec. 28, Blk. Y-2	160	406	1,268,265	7,927
Total 50 Wells	90,099.9	375*	173,207,199	1,922

*Average.

EXHIBIT 3—Continued

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Cities Service Company

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Gray County

Well Name & No., Sec. & Blk.	Acres Held By Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Barrett 1, Sec. 132, Blk. 3	160	311	4,038,392	25,365
Bell 1, Sec. 134, Blk. 3	160	318	2,664,396	16,652
Brown 1, Sec. 238, Blk. B-2	160	357	881,705	5,511
Case 1, Sec. 180, Blk. B-2	160	322	3,569,218	22,308
Cobb 1, Sec. 178, Blk. 3	132	292	3,558,487	26,958
Dauer 1-A, Sec. 236, Blk. B-2	160	411	1,253,112	7,832
Hexter 1, Sec. 215, Blk. B-2	160	414	1,468,427	9,178
Hexter 2, Sec. 235, Blk. B-2	160	412	605,989	3,787
Holmes 1, Sec. 179, Blk. 3	160	332	2,308,724	14,430
Meers 1-B, Sec. 106, Blk. 3	160	270	1,397,451	8,734
Mongole 1, Sec. 212, Blk. B-2	160	347	4,177,322	26,108
Wall 1, Sec. 161, Blk. 3	160	243	6,268,728	39,180
Wall 2, Sec. 161, Blk. 3	160	255	5,086,372	31,790
Hughey 1, Sec. 129, Blk. 3	160	246	2,774,836	17,343
Total 14 Wells	2,212	323.5*	40,073,159	18,116
Total All Counties 64 Wells	92,311.9	363.7*	213,280,358	2,310

*Average.

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Carson County				
Bost C–2, Sec. 10, Blk. Y–2, TTRR	320	366	533,154	1,666
Bost D–1, Sec. 1, Blk. Y–2, TTRR	640	357	115,850	181
Poling A–1, Sec. 12, Blk. Y–2, TTRR	80	377	2,756,005	34,450
Sanford A–1, Sec. 11, Blk. 3, AB&M	3,040	397	737,911	243
Total 4 Wells	4,080	374.2 Avg.	4,142,920	1,015
Hartley County				
Bivins A–7, Sec. 25, EL&RR	19,189.26	422	.....	.....
Bivins A–8, Sec. 25, EL&RR	19,189.26	426	6,236	.32
Bivins A–9, Sec. 21, C&S	19,189.26	422	25,591	1.30
Bivins A–10, Sec. 12, G&M	19,189.26	425	40,039	2
Total 4 Wells	76,757.04	423.7 Avg.	71,866	1.25
Hutchinson County				
Bivins B–1, Sec. 11, Blk. Y–2	373.33	367	9,340,475	25,019
Bivins B–2, Sec. 90, Blk. 46	373.33	325	5,658,698	15,157
Bivins B–3, Sec. 15, Blk. Y–2	373.33	373	9,518,461	25,496
Bivins B–4, Sec. 13, Blk. Y–2	373.33	...	7,842,815	21,008
Bivins B–5, Sec. 88, Blk. 46	373.33	242	2,864,450	7,673
Bivins B–6, Sec. 90, Blk. 46	373.33	350	7,935,922	21,257
Bivins F–1, Sec. 13, Blk. Y–2	160	371	2,129,992	13,312
Bost A–1, Sec. 6, Blk. Y–2	40	355	1,442,231	36,056
Bost B–1, Sec. 9, Blk. Y–2	360	356	744,881	2,069
Bost C–1, Sec. 10, Blk. Y–2	320	360	748,671	2,340
Dunaway A–1, Sec. 5, Blk. Y–2	160	356	1,176,570	7,354
Dunaway A–2, Sec. 5, Blk. Y–2	160	342	83,492	522
Dunaway B–1, Sec. 5, Blk. Y–2	160	316	458,992	2,869
Johnson A–1, Sec. 4, Blk. Y–2	799.1	345	1,681,999	2,105
Total 14 Wells	4,399.08	342.9****	51,627,649	11,736

EXHIBIT 3—Continued

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Canadian River Gas Company

Moore County

Well Name & No., Sec. & Blk.	Acres Held By Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Bivins A-6, Sec. 32, Blk. B-11	19,189.26	424	.....	.....
Bivins G-1, Sec. 93, Blk. 46	160	372	1,199,834	7,499
Bivins H-1, Sec. 95, Blk. 46	160	382	1,191,456	7,447
Bivins I-1, Mahan Survey	160	379	2,143,759	13,398
Bivins J-1, Sec. 54, Blk. 47*	640	391	1,548,126	2,419
Fee A-1, Sec. 76, Blk. 3, G&M**	3,827.8	385	2,255,170	589
Crawford A-1, Sec. 26, Blk. PMc.	1,440	419	770,046	535
Killgore A-1, Sec. 18, Blk. PMc. (This well is on a 9,874.8A lse.)	1,000	421	6,184	6
Masterson A-1, Sec. 46, Blk. 3, G&M***	14,740.35	386	3,735,531	253
Masterson A-2, Sec. 49, Blk. 3, G&M***	14,740.35	396	14,956,251	1,015
Masterson J-1, Sec. 59, Blk. O-18	3,424.69	406	2,045,198	597
[fol. 627]				
Masterson K-1, Sec. 85, Blk. O-18	1,055	406	658,420	624
Masterson M-1, Sec. 14, Blk. B-10	2,587.2	406	1,270,091	491
Read A-1, Sec. 14, Blk. B-12	640	385	1,993,103	3,114
Seay A-1, Sec. 85, Blk. 2, G&M	540	421	432,581	801
Sneed A-1, Sec. 51, Blk. 6-T***	5,440	410	1,973,479	363
Sneed B-1, Sec. 58, Blk. 6-T	2,777	405	1,407,287	507
Sneed C-1, Sec. 46, Blk. 6-T	480	401	192,372	401
Sneed D-1, Sec. 42, Blk. 6-T	640	403	444,758	695
Sneed D-2, Sec. 26, Blk. 6-T	640	398	.....	.....
Thompson A-1, Sec. 19, Blk. 44, (Well is on a 3,920 A lse.)	640	391	1,947,671	3,043
Thompson A-2, Sec. 24, Blk. 26 (Well is on a 3,920 A lse.)	640	408	877,011	1,370
Thompson B-1, Sec. 22, Blk. 26 (Well is on a 7,603.8 A lse.)	640	363	1,268,544	1,982
Warrick A-2, Sec. 92, Blk. 46	1,200	376	1,713,251	1,428
Total 24 Wells	77,401.65	397.2 Avg.	44,030,123	765

*Formerly Perkins A-2. **Formerly Perkins A-1. ***Guaranteed income lease. ****Average rock press. for 13 wells.

Potter County

Allison A–1, Sec. 1, Palmer Sur	100	382	679,424	6,794
Bivins A–2, Sec. 13, Blk. O–18	19,189.26	402	2,902,363	151
Bivins A–3, Sec. 30, Blk. M–20	19,189.26	402	9,193,447	479
Bivins A–4, Sec. 24, Blk. O–18	19,189.26	407	143,235	8
Bivins A–5, Sec. 25, Blk. O–18	19,189.26	418	922,856	48
Bivins A–13, Sec. 7, Blk. O–18	19,189.26	422	.....	.....
Bivins C–1, Sec. 106, Blk. 46	5,154.23	421	6,455,954	1,253
Bivins C–4, Sec. 103, Blk. 46	5,154.23	420	2,118,982	411
Bivins D–3, Sec. 15, Blk. M–20	5,154.23	409	3,220,067	625
Bivins E–1, Sec. 27, Blk. O–18	5,298.5	421	1,669,031	315
Crawford B–1, Sec. 78, Blk. O–18	1,453.04	420	561,247	386
Masterson B–1, Sec. 43, Blk. 3, G&M	9,193.41	398	6,881,786	749
Masterson B–5, Sec. 31, Blk. 3, G&M	9,193.41	411	754,282	82
Masterson C–1, Sec. 65, Blk. O–18	5,610	410	239,098	43
Masterson, G–3, Sec. 102, Blk. O–18	5,610	416	4,585,518	817
Masterson D–4, Sec. 108, Blk. O–18	5,457.18	415	19,126,118	3,505
Masterson E–2, Sec. 70, Blk. O–18	1,760	403	491,795	279
Masterson F–1, Sec. 14, Blk. 3, G&M	605.69	419	234,455	387
Masterson G–2, Se. 10, Blk. 3, G&M	640	402	500,291	782
Masterson H–1, Sec. 2, Blk. B–11	2,240	416	233,901	104
Masterson I–1, Sec. 20, Blk. 3, G&M	640	419	334,762	523
Masterson J–2, Sec. 69, Blk. O–18	3,424.69	419	1,024,504	315
Masterson L–1, Sec. 82, Blk. 3, G&M	640	408	118,198	185
Masterson N–1, Sec. 17, Blk. 3, G&M	640	418	73,799	115
McBride A–1, Sec. 98, Blk. 46	600	411	381,762	636
Warrick A–1, Sec. 16, Blk. Y–2	1,200	364	2,750,594	2,292
Total 26 Wells	165,714.91	409.7 Avg.	65,597,469	448
Total All Countries 72 Wells	328,352.68	392*	165,470,027	613

*Average for 71 Wells. ***Guaranteed income lease.

[fol. 628]

EXHIBIT 3—Continued

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Red River Gas Company

Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Carson County				
Bivins A-3, Sec. 43, Blk. M-20	582.85	405	1,211,773	2,079
Bivins A-4, Sec. 44, Blk. M-20	582.85	408	2,909	5
Bivins A-5, Sec. 45, Blk. M-20	582.85	408	18,369	32
Deahl A-1, Sec. 5, Blk. 5, B&B	160	403	1,115,702	6,973
Bennett A-1, Sec. 2, Blk. 5, B&B	640	404	697,791	1,090
Total 5 Wells	2,548.55	405.6 Avg.	3,046,544	1,195
Hutchinson County				
Lehman Harris 1, Sec. 91, Blk. 46 (Bivins Estate)	2,200	362	9,833,440	4,470
Total 1 Well	2,200	362 Avg.	9,833,440	4,470
Moore County				
Shelton A-1, Sec. 52, Blk. 3, G&M	640	414	3,054,815	4,773
Total 1 Well	640	414 Avg.	3,054,815	4,773
Potter County				
Bivins A-1, Sec. 42, Blk. M-20	582.85	403.5	1,299,749	2,230
Bivins A-2, Sec. 39, Blk. M-20	582.85	408	1,257,372	2,157
Bivins A-6, Sec. 37, Blk. M-20	582.85	412	2,855	5
Bivins A-7, Sec.38, Blk. M-20	582.85	409	8,167	14
Bivins B-1, Sec. 39, Blk. M-20	160	409	150,401	940
Total 5 Wells	2,491.40	408.3 Avg.	2,718,544	1,091
Total All Counties 12 Wells	7,879.95	403.7*	18,653,343	2,367

*Average.

North American Oil and Gas Company

Carson County

Well Name & No., Sec. & Blk.	Acres Held By Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Burnett 1-80, Sec. 80, Blk. 4	80	305	857,373	10,717
Burnett 1-97, Sec. 97, Blk. 4	160	294	1,173,108	7,332
Burnett 1-98, Sec. 98, Blk. 4	160	293	1,741,258	10,883
McEwen 1, Sec. 1, Blk. 4	91	363	678,683	7,458
Poling 1, Sec. 24, Blk. Y-2*	560	407	427,990	764
Ryan-Jordan 1, Sec. 83, Blk. 4**	80	286	126,568	1,582
Total 6 Wells	1,131	324.6 Avg.	5,004,980	4,425
Gray County				
Barrett 1, Sec. 131, Blk. 3	320	305	2,035,705	6,362
Case 1, Sec. 180, Blk. B-2	193	327	955,165	4,949
Duncan 1, Sec. 135, Blk. 3	80	304	492,786	6,160
Sullivan 1, Sec. 160, Blk. 3	118	299	232,437	1,970
Bradford 1, Sec. 118, Blk. B-2	160	317	.....	.....
Total 5 Wells	871	310.4 Avg.	3,716,093	5,227
Moore County				
Bivins 1, Sec. 93, Blk. 46	160	384	.....	.....
Total 1 Well	160	384 Avg.	.....	.....
Total All Counties 12 Wells	2,162	305 Avg.	8,721,073	4,735

*Panhandle Eastern Purchase.

**North American O&G Company purchase.

[fol. 630]

EXHIBIT 3—Continued

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Interstate Production Company

Carson County

Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Burnett 1-100, Sec. 100, Blk. 4	160	.....	1,851,204	11,570
Coffee 1, Sec. 15, Blk. 4	80	398	465,539	5,819
McConnell 1, Sec. 65, Blk. 4	320	258	2,427,596	7,586
Moore 1, Sec. 20, Blk. 7	156	391	.....	.....
Seiber 1, Sec. 10, Blk. 7	160	402	.....	.....
Total 5 Wells	876	362.2*	4,744,339	8,472
Gray County				
Frashier 1, Sec. 177, Blk. 3	100	270	1,919,830	19,198
Total 1 Well	100	270 Avg.	1,919,830	19,198
Total All Counties 6 Wells	976	343.8**	6,664,169	10,097

*Average for 4 wells.

**Average for 5 wells.

Summary
North American Oil and Gas Company
and
Interstate Production Company

County	No. Wells	Acres Held by Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Carson	11	2,007	339.7***	9,749,319	5,765
Gray	6	971	303.6	5,635,923	6,949
Moore	1	160	384	.....	.....
Total	18	3,138	329.5****	15,385,242	6,149

***Average for 10 wells.
****Average for 17 wells.

[fol. 631] Texas-Interstate Pipe Line Company Production to Panhandle Eastern Pipe Line Company

Well Name & No., Sec. & Blk.				
Carson County				
Burnett 1–60, Sec. 60, Blk. 5	640	401	676,310	1,057
Burnett 1–77, Sec. 77, Blk. 5	520	404	994,493	1,912
Burnett 1–79, Sec. 79, Blk. 5	320	396	122,461	383
Burnett 1–97, Sec. 97, Blk. 5	640	384	417,028	652
Burnett 1–99, Sec. 99, Blk. 5	480	400	457,990	954
Burnett 1–51, Sec. 51, Blk. 5	80	405	949,102	11,864
Burnett 1–84, Sec. 84, Blk. 5	100	388	1,171,471	11,715
Burnett 1–86, Sec. 86, Blk. 5	80	405	934,976	11,687
Burnett 1–108, Sec. 108, Blk. 5	100	314	210,444	2,104
Bennett 1–6, Sec. 6, Blk. 5, B&B	160	409	384,964	2,406
Sanford 1–4, Sec. 4, Blk. 3, AB&M	160	368	151,094	944
Total	3,280	388.5 Avg.	6,470,333	1,973
Hutchinson County				
Bost 1–9, Sec. 9, Blk. Y–2	120	355	1,007,141	8,393
Bost 1–14, Sec. 14, Blk. Y–2	63	372	945,441	15,007
Bivins 1–91, Sec. 91, Blk. 46	80	326	357,989	4,475
Total	263	351 Avg.	2,310,571	8,785

EXHIBIT 3—Continued

West Panhandle Field

Texas-Interstate Pipe Line Company Production to Panhandle Eastern Pipe Line Company

Moore County

Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Sneed 1-6, Sec. 6, Blk. B-10	320	414	272,211	851
Sneed 1-23, Sec. 23, Blk. 3-T	640	405	316,134	494
Sneed 1-33, Sec. 33, Blk. 6-T	640	417	315,668	493
Sneed 1-45, Sec. 45, Blk. 6-T	160	419	275,506	1,722
Sneed 1-48, Sec. 48, Blk. 6-T	326	413	467,147	1,433
Brown 1-22, Sec. 22, Blk. 44	640	411	34,873	54
Zofness 1-55, Sec. 55, Blk. 6-T	320	413	655,935	2,050
Zofness 2-55, Sec. 55, Blk. 6-T	320	404	1,898,604	5,933
Total	3,366	412 Avg.	4,236,078	1,258

Potter County

Masterson 1-85, Sec. 85, Blk. 3, G&M	160	414	179,656	1,123
Rockwell 1-102, Sec. 102, Blk. 46	320	416	303,042	947
River Bed (State) Sec. 106, Blk. 46	640	425	391,380	612
Weymouth 1-27, Sec. 37, Blk. B-10	320	416	1,022,981	3,197
Total	1,440	417.5 Avg.	1,897,059	1,317
Total All Counties	8,349	396 Avg.	14,914,041	1,786

[fol. 632]

Central States Power and Light

Carson County

Company	Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Dixon Creek	Eller 1, Sec. 200, Blk. 3	160	250	864,936	5,406
Dixon Creek	Simms 1, Sec. 11, Blk. 7	60	396	223,334	3,722
Total 2 Wells		220	323*	1,088,270	4,947

Gray County

Joana Oil Corp.	Beavers 1, Sec. 124, Blk. B-2	640	355	1,006,547	1,573
Mid-Gray	McCullum 1, Sec. 153, Blk. 3	40	280	330,359	8,259
Total 2 Wells		680	317.5*	1,336,906	1,966
Total All Counties 4 Wells		900	320.2*	2,425,176	2,695

*Average.

[fol. 633]

Panhandle Power & Light Company

Moore County

Well Name & No., Sec. & Blk.	Acres Held By Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Jno. Hofsetter 1, Sec. 237, Blk. 44	4	430	355,493	88,873
Total 1 Well	4	430 Avg.	355,493	88,873

[fol. 634]

EXHIBIT 3—Continued

West Panhandle Field

Details of Gas Production—Gas Pipeline Companies

Producers Utility Corporation

Carson County

Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre M. C. F.
Powers 1, Sec. 248, Blk. B–2	80	365	130,599	1,632
Moore 1, Sec. 20, Blk. 7	120	.....	122,686	1,022
Total 2 Wells	200	365*	253,285	1,266

*Average for 1 well.

[fol. 635]

EXHIBIT 16

West Panhandle Field

Details of Gas Production—Sweet and Sour Gas Wells Not Owned by Nor Connected to Gas Pipeline Companies

Summary

	No. of Wells	Acres Held by Wells	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Sweet	180	30,096	233 Avg.	418,652,466	13.9
Sour	211	33,750	220 Avg.	496,635,182	14.7
Totals	391	63,846 (Avg. 163 Ac. per well)	226 Avg.	915,287,648	14.3
Of the 391 wells the following have never produced	50	16,765			
Total productive	341	47,081 (Avg. 138 Ac. per well)		915,287,648	19.5

NOTE.—Of these 341 wells 199 were completed originally as oil wells and have produced to July 31, 1935, 521,493,622 MCF of gas.

[fol. 636]

EXHIBIT 16—Continued

West Panhandle Field

Details of Gas Production—Sweet Gas Wells Not Owned by Nor Connected to Gas Pipeline Companies

Summary

County	No. of wells	Acres Held by Wells	Rock Press. R.R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions M. C. F.
Carson	64	8,478	254 Avg.	189,318,655	22.3
Gray	41	8,868	224 Avg.	44,606,404	5.0
Hutchinson	71	8,070	215 Avg.	184,727,407	22.9
Moore	4	4,680	375 Avg.	.....	.....
Totals	180	30,096***	233***	418,652,466	13.9
Of the 180 wells the following have never produced	29	10,427			
Total productive	151*	19,669****		418,652,466	21.3

*Of these 151 wells at least 61 of them formerly were oil wells, and have produced 147,679,268 MCF of gas.

**Average Pressure for 155 wells.

***Average 167 acres per well.

****Average 130 acres per well.

EXHIBIT 16—Continued

[fol. 637]

West Panhandle Field

Details of Gas Production—Sweet Gas Wells not Owned by nor Connected to Gas Pipeline Companies

Carson County

Company	Well Name & No., Sec & Blk	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
American Ref.	Burnett 4, Sec 112, Blk 5	160	170	300,614	1.9
American Ref.	Burnett 6, Sec 115, Blk 5	40*	200	*736,628	18.5
Barnard	Barnard 1, Sec 23, Blk 4	160	267	2,749,078	17.2
Burnett, R. A.	Burnett 1, Sec 107, Blk 5	80*	216	2,858,063	35.7
Carson Lake	Keyes 1, Sec 1, Blk 4	80	355	.....	.....
Champlin	Bryan 1, Sec 92, Blk 4	13*	190	2,200,127	169.5
Champlin	Bryan 2, Sec 92, Blk 4	13*	NP	2,971,701	228.6
Champlin	Bryan 4, Sec 92, Blk 4	13*	216	1,296,131	99.6
Continental	Burnett 5, Sec 107, Blk 5	53*	230	7,696,165	145.1
Continental	Burnett G-1, Sec 126, Blk 5	320*	253	9,248,689	28.9
Continental	Burnett F-1, Sec 117, Blk 5	160*	248	10,847,101	67.8
Continental	Burnett L-1, Sec 79, Blk 4	160	300	11,039,681	69.0
Continental	Burnett J-1, Sec 121, Blk 5	160	NP	.....	.....
Continental	Burnett 2, Sec 107, Blk 5	53*	250	1,652,051	31.2
Continental	Burnett 3-C, Sec 105, Blk 5	53	237	3,463,948	65.3
Dixon Creek	McConnell B-1, Sec 65, Blk 4	160	257	3,392,350	21.2
Dixon Creek	McConnell A-1, Sec 46, Blk 4	240	255	1,781,740	7.4
Dixon Creek	McConnell C-1, Sec 65, Blk 4	80	253	2,509,167	31.4
Dixon Creek	McConnell D-1, Sec 45, Blk 4	160	246	1,087,416	6.8
Dixon Creek	McConnell E-1, Sec 201, Blk 3	160	245	1,276,643	8.0
Dixon Creek	McConnell F-1, Sec 201, Blk 3	160	255	158,183	1.0
Dixon Creek	McConnell G-1, Sec 185, Blk 3	240	249	554,957	2.3
Empire	Jordan-Brown 1, Sec 93, Blk 4	160*	223	4,713,438	29.4
Fentress	Barnard 1, Sec 44, Blk 4	160	256	2,331,518	14.5

Gulf	Noel 4, Sec 198, Blk 3	80*	230	727,011	9.1
Hagy	Magnolia 1, Sec 40, Blk 4	20	361	.....	.....
Hagy et al	Barnard 1, Sec 44, Blk 4	80*	248	5,870,830	73.4
Hagy et al	Barnard 2, Sec 44, Blk 4	80	238	4,124,055	51.5
Hagy et al	Barnard 3, Sec 23, Blk 4	160	256	1,062,756	6.6
Hagy et al	Barnard 4, Sec 24, Blk 4	160	258	557,572	3.5
Hagy et al	Bednorz 1, Sec 202, Blk 3	70	275	3,115,028	44.5
Hagy et al	Bednorz 2, Sec 202, Blk 3	70	242	3,089,444	54.4
Hagy et al	Kalka 1, Sec 43, Blk 4	80	257	10,146,842	126.9
Hagy et al	McConnell 1, Sec 45, Blk 4	160	243	6,711,807	42.0
Hagy et al	McConnell 2, Sec 46, Blk 4	80	247	11,476,261	143.5
Hagy et al	McConnell 3, Sec 46, Blk 4	80	258	5,945,695	74.3
Hagy et al	McConnell 4, Sec 46, Blk 4	80	260	4,143,909	51.7
Hagy et al	McConnell 5, Sec 45, Blk 4	160	247	2,701,236	16.9
Hagy et al	McConnell 6, Sec 201, Blk 3	200	241	6,419,627	32.1
Hagy et al	McConnell 7, Sec 185, Blk 3	160	248	1,474,424	9.2
Hagy et al	Sullivan 1, Sec 44, Blk 4	160	247	5,370,483	33.6
Hagy et al	Sullivan 2, Sec 44, Bk 4	160	242	5,490,704	34.3
Huber	Burnett 1-A, Sec 123, Blk 5	320	300	1,069,393	3.3
Huber	Chapman 1, Sec 7, Blk 3, AB&M	640	400	3,424,126	5.4
Hutchinson Drlg	Percival 2, Sec 199, Blk 3	*	109	788,631	9.9
Hutchinson Drlg	Percival 3, Sec 199, Blk 3	80*	256		
Johnson et al	Eller 1, Sec 200, Blk 3	160	...	.....	.....
Last Chance	McConnell 1, Sec 201, Blk 3	120*	240	-2,489,200	20.7
Lyons	Bednorz 1, Sec 202, Blk 3	80	246	139,326	1.7
Magnolia	McConnell 1, Sec 66, Blk 4	160	256	5,767,356	36.0
Magnolia	Harvey-Burns 1, Sec 115, Blk 5	80	250	613,942	7.7

*This well originally completed as oil well.

EXHIBIT 16—Continued

[fol. 638]

West Panhandle Field

Details of Gas Production—Sweet Gas Wells Not Owned by nor Connected to Gas Pipeline Companies

Carson County (Continued)

Company	Well Name & No., Sec & Blk	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Panhandle Northern	Cobb 1, Sec 184, Blk 3	80*	252	3,133,694	38.8
Panhandle Ref.	Kirby 1, Sec 183, Blk 3	160	NP	.....	.....
Producers Util.	McConnell 1, Sec 65, Blk 4	160	246	3,624,998	22.6
Shamrock	Duncan 1, Sec 5, Blk 7	160	400	.....	.....
Shamrock	Thompson 1, Sec 15, Blk 7	80	398	.....	.....
Skelly	Burnett 2, Sec 93, Blk 5	160*	265	689,519	4.3
Texas Co.	Burnett 1, Sec 114, Blk 5	80*	112	.....	.....
Texas Co.	Burnett 2, Sec 113, Blk 5	160*	...	7,838,522	49.0
Texas Co.	Burnett 3, Sec 108, Blk 5	240*	Dead	1,012,009	4.2
Texas Co.	Burnett 6, Sec 114, Blk 5	80*	Dead	245,795	3.1
Texas Co.	McConnell 1, Sec 66, Blk 4	160*	245	2,009,871	12.6
Twin Lake	Cobb 1, Sec 184, Blk 3	80	266	2,459,200	30.7
Phillips	Jordan 1, Sec 114, Blk 4	160	...	.....	.....
Total 64 Wells		8,478	254**	189,318,655	22.3

**Average Pressure for 56 wells.

Gray County

Baldridge	Melton 1-B, Sec 95, Blk B-2	160	240	946,061	5.9
Bradshaw	Vaniman 2, Sec 175, Blk 3	40*	247	676,911	16.9
British-American	Meers 1, Sec 107, Blk 3	80	262	2,448,130	30.6
Burch-Gordon	Langham 1, Sec. 1, Blk B-2	40	147	908,328	22.7
Coltexo-Corp.	Langham A-1, Sec 1, Blk B-2	40	150	1,937,658	48.4

Coltexo-Corp.	Langham D-1, Sec 1, Blk B-2	40	137	1,002,623	25.1
Continental	Combs-Worley 1, Sec 38, Blk 3	160*	60	201,453	1.3
Delmar	Liffold 1, Sec 55, Blk B-2	40	NP	.....	.....
Dorsyann	Bull 1, Sec 3, Blk B-2	100*	193	465,504	4.7
Dyke	McConnell 1, Sec 187, Blk 3	80*	212	49,640	0.6
Edwards	Case 1, Sec 182, Blk B-2	333	290	.....	.....
Gulf	A. Holmes 2, Sec 87, Blk 3	80*	262	89,449	1.1
Hagy, Harrington & Marsh	Chadwick 1, Sec 210, Blk B-2	334	Drilling in	.....	.....
Herrogan	Bradford 1, Sec 123, Blk B-2	320	312	.....	.....
Humble	Hughey 1, Sec 154, Blk 3	320	298	889,851	2.8
Humble	Houng 1, Sec 110, Blk 3	480	310	473,192	1.0
International	McConnell 1, Sec 175, Blk 3	160	245	396,293	2.5
Magnolia	Fee 227 No. 5, Sec 14, Blk 3	640	193	851,586	1.3
Magnolia	Fee 227 No. 11, Sec 14, Blk 3	640*	150	1,586	.....
Magnolia	Latham 1, Sec 153, Blk 3	101*	204	591,628	5.9
Phillips	Hollenbeck 1, Sec 176, Blk 3	160	255	1,482,243	9.3
Phillips	Riley 2, Sec 88, Blk B-2	80	125	354,231	4.4
Portland	McKay 1, Sec 175, Blk 3	320	260	.....	.....
Rudman-Brown	Clay 1, Sec 177, Blk B-2	160*	NP	.....	.....
Shamrock	W. Reynolds 1, Sec 84, Blk 3	80*	.....	109,615	1.4
Shamrock	Reynolds 1, Sec 84, Blk 3	40*	145	541,801	13.5
Sinclair-Prairie	W. Reynolds 1, Sec 84, Blk 3	160	205	679,914	4.2
Skelly	McKay 1, Sec 175, Blk 3	80	239	15,529,634	194.1
Southwest Prod.	Cobb 1, Sec 184, Blk 3	240	260	4,201,467	17.5

*This well originally completed as oil well.

EXHIBIT 16—Continued

[fol. 639]

West Panhandle Field

Details of Gas Production—Sweet Gas Wells Not Owned by Nor Connected to Gas Pipeline Companies

Gray County (Continued)

Company	Well Name & No., Sec & Blk	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Taylor Oil	Taylor 1, Sec 51, Blk B-2	640	415	.....	.....
Texas Co.	Bowers 3, Sec 91, Blk B-2	160*	108	1,262,678	7.9
Texas Co.	Bull 1, Sec. 2, Blk B-2	240*	126	1,767,455	7.4
Texas Co.	Bull 3, Sec 2, Blk B-2	160	.....	351,738	2.2
Texas Co.	Langham 2, Sec 1, Blk B-2	80*	155	1,033,225	12.9
Texas Co.	Taylor 1-D, Sec 81, Blk B-2	640	345	.....	.....
Texas Co.	Taylor 1-C, Sec 52, Blk B-2	640*	.....	.....	.....
Texas Co.	Wright 6, Sec 13, Blk 3	160*	.....	588,935	3.7
Texwell	McConnell 1, Sec 174, Blk 3	40*	120	86,572	2.2
Travis	Crossman 1, Sec 97, Blk B-2	320	NP	947,224	3.0
Travis & Reiger	Hopkins 1, Sec 84, Blk B-2	160	315	1,695,787	10.6
Travis & Reiger	Mackie 1, Sec 114, Blk B-2	120	398	2,043,992	17.1
Total 41 Wells		8,868	224**	44,606,404	5.0

**Average Pressure for 33 wells.

Hutchinson County

Alamosa	Sanford 3, Sec 83, Blk 46	20*	187	3,827,854	191.5
Alamosa	Sanford 4, Sec 85, Blk 46	80*	193	3,105,212	38.8
Alamosa	Sanford B-5, Sec 85, Blk 46	80	205	2,220,479	27.8
Antelope	Sanford 3, Sec 82, Blk 46	40*	182	1,889,956	47.2
Antelope	Sanford 4, Sec 82, Blk 46	80	185	2,806,039	35.1
Continental	Burnett 1-H, Sec 125, Blk 5	600*	262	4,442,700	7.4
Continental	Johnson 1-E, Sec 5, Blk 1	320	233	2,648,639	8.3
Danciger	Cheatham 1, Sec 38, Blk Y	80*	190	556,526	6.9
Danube	Alspaugh 1, Sec 34, Blk Y	80*	232	1,173,807	29.4
Danube	Alspaugh 2, Sec 34, Blk Y	40*	175	.....	.....

Danube	Reid 1, Sec 34, Blk Y	40	209	3,342,511	83.6
Danube	John Wheatly 1, Sec 2, Blk Y-2	80	353	7,533,357	94.2
Deal O & G	Deal 2, Sec 28, Blk Y	20*	190	2,540,129	127.1
Deal O & G	Sanford 2, Sec 81, Blk 46	40	.....	727,172	18.2
Dixon Creek	Jamison 1, Dubois	240	350	.....	.....
Dison Creek	Johnson 1-B, Gammel	80*	180	2,471,639	30.9
Dixon Creek	Johnson 1-C, Williams	240	190	465,274	1.9
Dixon Creek	Johnson 1-E, Sec 1, Blk XO3	80	180	1,142,937	14.3
Dixon Creek	Johnson 1-F, Sec 15, Blk XO3	60	255	1,865,929	31.1
Henderson	Cont. Whitt. 1, Sec 1, Yantes	60	205	3,502,759	58.4
Henderson	Cont. Whitt. 2, Sec 1, Yantes	60	NP	2,759,735	46.0
Henderson	N. A. Sanford 1, Sec 85, Blk 46	80	210	4,495,662	56.2
Henderson	G. P. Sanford 1, Sec 87, Blk 46	160*	230	5,567,146	34.8
Huber	Blackburn 1, Sec 33, Blk Y	201	233	2,470,912	12.3
Huber	Burnett 2, Sec 123, Blk 5	320	284	126,540	0.4
Huber	Cheatham 2-B	80	.....	2,102,821	26.3
Huber	Christian 2, Sec 33, Blk Y	40	NP	1,291,951	32.3
Huber	Christian 1, Sec 33, Blk Y	106	255	1,733,104	16.3
Huber	Christian 3, Sec 33, Blk Y	80	239	1,828,116	18.3
Huber	Blasdel A-1, Sec 6, Blk 1	240	250	2,459,431	10.2
Huber	Penny Johnson 3	80	.....	.....	.....

[fol. 640]

Huber	Premier 1, Sec 33, Blk Y	120*	165	435,176	3.6
Huber	Spurlock 1, Sec 33, Blk Y	53	258	2,115,583	39.9
Liner Holding	Blasdel 1-D, Sec 6, Blk 1	80	264	2,062,695	25.8
Mid. Pool	Sanford 1, Sec 1, Blk XO3	116	192	1,631,041	14.1
No. Am. Shell	Bivins 1, Sec 86, Blk 46	320*	240	365,313	1.1
Phillips	Bivins 1, Sec 84, Blk 46	80*	189	1,795,110	22.4
Phillips	Burl 1, Sec 4, Blk 1	80*	250	932,107	11.7
Phillips	Cecil 1, Sec 85, Blk 46	40	212	170,087	4.2
Phillips	Cecil 2, Sec 85, Blk 46	40	210	272,771	6.8
Phillips	Cheatham 1, Sec 38, Blk Y	20*	207	727,559	36.4
Phillips	Cheatham 2, Sec 38, Blk Y	20*	205	216,922	10.8
Phillips	Eagle 1, Sec 86, Blk 46	100*	.....	.....	.....

*This well originally completed as oil well.

EXHIBIT 16—Continued

West Panhandle Field

Details of Gas Production—Sweet Gas Wells not Owned by nor Connected to Gas Pipeline Companies

Hutchinson County—Continued

Company	Well Name & No., Sec & Blk	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Phillips	Garner 1, Sec 34, Blk Y	160*	198	748,495	4.7
Phillips	J. Johnson 1, Sec 5, Blk 1	320*	247	809,544	2.5
Phillips	N. R. Johnson 1, Sec 3, Blk 1	200	262	1,009,829	5.0
Phillips	M. Johnson 2, Sec 34, Blk Y	80*	230	1,774,183	22.2
Phillips	M Johnson 3, Sec 34, Blk Y	80*	219	388,592	4.9
Phillips	Katz 1, Sec 35, Blk Y	40*	216	68,999	1.7
Phillips	Katz 2, Sec 35, Blk Y	40*	245	347,293	8.7
Phillips	McMann 1, Sec 83, Blk 46	137	185	7,861,628	57.4
Phillips	McMann 2, Sec 83, Blk 46	137	188	3,003,512	21.9
Phillips	Mudge 1, Sec 85, Blk 46	160*	200	1,109,569	6.9
Phillips	Royal 1, Sec 34, Blk Y	80*	111	1,635,075	22.4
Phillips	Royal 2, Sec 34, Blk Y	80*	118	189,753	2.4
Phillips	Trammell 1, Sec 38, Blk Y	80	220	996,859	12.5
Phillips	Yantes 1, Sec 8, Blk Y-2	80	227	1,970,085	24.6
Polo (Gordon)	Sanford 1, Sec 83, Blk 46	10	185	13,887,470	1,388.7
Reliance	Sanford 1, Sec 83, Blk 46	30	185	12,741,051	424.7
Rubin	Rubin 2, Rubin	10	185	2,831,479	283.1
Rubin	Rubin 3, Rubin	10	195	4,197,579	419.8
Rubin	Rubin 4, Rubin	20	190	5,594,284	279.7
Sinclair	Johnson 1-D, Sec 8, Blk Y-2	160	240	508,603	3.2
Sinclair	Johnson 1-B, Sec 32, Blk Y-2	320	225	.....	.....
Sinclair	Johnson 1-C, Sec 32, Blk Y-2	160*	222	.....	.....
Sinclair	Reed 1, McDonald	160	296	2,519,424	15.7
Skelly	Bivins 1, Sec 84, Blk 46	160*	191	2,754,399	17.2
Skyrocket	Jamison 1, Dubois	320*	NP	.....	.....
Texarado	Sanford 1 & 2, Sec 83, Blk 46	80*	180	30,918,289	386.5
Underwood	Johnson 1, Williams	80	190	5,038,712	63.0
Total 71 wells		8,070	215**	184,727,407	22.9

*This well originally completed as oil well.

**Average Pressure for 64 wells.

EXHIBIT 16—Continued

[fol. 641]

West Panhandle Field

Details of Gas Production—Sweet Gas Wells Not Owned by Nor Connected to Gas Pipeline Companies

Moore County

Company	Well Name & No., Sec & Blk	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Continental	Sneed 1-A, Sec 25, Poitevent	4,360	419	.....	.....
Dixon Creek	Sneed 1-A, Sec 65, Blk 3	40	332	.....	.....
Dixon Creek	Sneed 4-A, Sec 65, Blk 3	40	NP	.....	.....
Dixon Creek	Sneed 1-B, Sec 68, Blk 3	240*	NP	.....	.....
Total 4 wells		4,680	375**	.....	.....

*This well originally completed as oil well.
**Average Pressure for 2 wells.

[fol. 642]

Summary

County	No. of Wells	Acres Held by Wells	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Carson	21	1,729	248 Avg.	32,112,179	18.6
Gray	3	400	151 Avg.	4,472,446	11.2
Hutchinson	149	16,825	175 Avg.	341,285,524	20.3
Moore	38	14,796	376 Avg.	118,765,033	8.0
Totals	211	33,750 (Avg. 160 Ac. per well)	220 Avg. (161 wells)	496,635,182	14.7
Of the 211 wells the following have never produced	21	6,338			
Total Productive	190	27,412 (Avg. 144 Ac. per well)		496,635,182	18.1

NOTE.—Of these 190 wells at least 138 of them have also produced oil, they have produced to July 31, 1935, 373,814,354 MCF of gas.

EXHIBIT 16—Continued

[fol. 643]

West Panhandle Field

Details of Gas Production—Sour Gas Wells Not Owned by Nor Connected to Gas Pipeline Companies

Carson County

Company	Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
American Ref.	Burnett 7 Sec 115, Blk 5	40*	245	3,548,473	88.8
Burnett, R. A.	Burnett (Silk) 6 Sec 115, Blk 5	240*	241	1,121,507	4.7
Continental	Burnett 1-M Sec 100, Blk 4	160*	300	247,659	1.5
Continental	Burnett 2-A Sec 116, Blk 5	40	243	4,080,378	102.0
Continental	Burnett 1-B Sec 101, Blk 4	160*	310	2,272,583	14.2
Continental	Jordan 1-A Sec 123, Blk 4	160	NP	38,983	0.2
Gulf	Noel 1 Sec 198, Blk 3	80*	235	7,121,365	89.0
Magnolia	Burnett Est 1 Sec 101, Blk 4	80*	.....	.....	.....
Magnolia	Burnett 3-H Sec 115, Blk 5	80	256	1,525,238	19.1
Magnolia	Fee #224 8 Sec 91, Blk 4	46	218	196,835	4.3
Shell	Bryan 2-B Sec 107, Blk 4	10	226	.....	.....
Shell	Bryan 2-C Sec 107, Blk 4	10*	205	.....	.....
Shell	Bryan 2-D Sec 92, Blk 4	10*	.....	2,253,795	225.4
Sinclair Prairie	Bryan 1 Sec 107, Blk 4	80	NP	66,739	.08
Stanolind	Percival 1 Sec 199, Blk 3	80*	162	1,586,562	19.8
Stanolind	Percival 2 Sec 199, Blk 3	..*	.....	.....	.....
Stanolind	Noel 2 Sec 198, Blk 3	40*	.....	6,810,146	170.4
Texas Co.	Burnett 10 Sec 100, Blk 4	53*	305	.....	.....
Texas Co.	Boney 3 Sec 90, Blk 3	160*	Dead	1,234,687	7.7
United Crude	Jordan 1 Sec 104, Blk 4	160?	267	7,229	.....
Willis et al	Burnett 1 Sec 111, Blk 5	40	255	.....	.....
Total 21 Wells		1,729	248 Avg. 14 wells	32,112,179	18.6

		Gray County			
Dyke Oil	Noel 2 Sec 187, Blk 3	80*	.....	2,892,770	36.2
Magnolia	Heitholt 2 Sec 152, Blk 3	160*	198	1,579,676	9.9
Meers	Meers 1 Sec 107, Blk 3	160	104	.....	.....
Total 3 Wells		400	151 Avg. 2 wells	4,472,446	11.2
		Hutchinson County			
Alamosa	Sanford 1 Sec 83, Blk 46	10*	172	1,975,095	197.5
Alamosa	Sanford 2 Sec 83, Blk 46	10*	172	2,639,460	263.9
Antelope	Sanford 2 Sec 82, Blk 46	40*	179	2,008,805	50.2
Armstrong	Byrd 1, D. Luce	.....	NP	.....	.....
Amarillo Bank	Smith 1 Sec 14, Blk Y	40*	100		
Amarillo Bank	Smith 3 Sec 14, Blk Y	.. *	94	4,699,333	117.4
Amarillo Bank	Smith 4 Sec 14, Blk Y	.. *	92		
Continental	Carver 1 Heath	160	419	.....	.....
Continental	Johnson 1 Sec 6, Blk 1	320	240	5,472,585	17.1
Continental	River Bed, River	2,080	265	1,225,835	0.6
Continental	Sanford 1 Sec 80, Blk 46	80	200	5,687,034	71.1
Continental	Sanford 1-C Sec 79, Blk 46	320*	201	2,776,515	8.7
[fol. 644]					
Dixon Creek	Smith 1-A Sec 14, Blk Y	*	90)		
Dixon Creek	Smith L-3 Sec 14, Blk Y	*	90)		
Dixon Creek	Smith L-2 Sec 14, Blk Y	320*	95)	9,984,697	31.2
Dixon Creek	Smith 9-A Sec 14, Blk Y	*	90)		
Dixon Creek	Smith 10-A Sec 14, Blk Y	*	90)		
Dixon Creek	Smith 12-A Sec 14, Blk Y	*	NP)		
Dixon Creek	Smith 15-A Sec 14, Blk Y	*	NP)		
Dixon Creek	Smith 17 Sec 14, Blk Y	*	93)		
Dixon Creek	Smith 17-A Sec 14, Blk Y	.....	NP)		
Dixon Creek	Smith 18-A Sec 14, Blk Y	*	140)		
Dixon Creek	Smith 19 Sec 14, Blk Y	*	68)		
Dixon Creek	Smith 21 Sec 14, Blk Y	*	Dead)		
Dixon Creek	Smith 22 Sec 14, Blk Y	?	90)		

*This well was originally completed as an oil well.

EXHIBIT 16—Continued

West Panhandle Field

Details of Gas Production—Sour Gas Wells Not Owned by Nor Connected to Gas Pipeline Companies

Hutchinson County (Continued)

Company	Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Dixon Creek	Smith 25 Sec 14, Blk Y	?	NP)		
Dixon Creek	Smith 28 Sec 14, Blk Y	?	Dead)		
Dixon Creek	Smith 29 Sec 14, Blk Y	?	NP)		
Dixon Creek	Smith 30 Sec 14, Blk Y	?	NP)		
Deal O&G	Sanford 1 Sec 81, Blk 46	40*	186	29,377,773	733.0
Derby	Keaton 1 Sec 22, Blk Y	40*	148)	5,241,662	131.1
Derby	Keaton 2 Sec 22, Blk Y	*	148)		
Derby	Keaton 4 Sec 22, Blk Y	.....	124)		
Empire	Johnson C-1 Sec 70, Blk 46	160	180	1,255,563	7.8
Finston	Finston 1 Sec 22, Blk Y	10*	NP	8,093,098	809.3
Gulf	Dial 43 Sec 24, Blk 47	320*	107	808,954	2.5
Gulf	Hodges 1 Sec 5, Blk M-26	160*	196)	387,835	2.4
Gulf	Hodges 2 Sec 5, Blk M-26	*	192)		
Gulf	Johnson 9 Sec 70, Blk 46	*	145)		
Gulf	Johnson 10 Sec 70, Blk 46	*	118)		
Gulf	Johnson 12 Sec 70, Blk 46	160*	145)	19,781,875	123.7
Gulf	Johnson 14 Sec 70, Blk 46	*	NP)		
Gulf	Johnson 14-C Sec 70, Blk 46	?	NP)		
Gulf	Johnson 15 Sec 70, Blk 46	*	118)		
Gulf	Johnson 19 Sec 70, Blk 46	*	145)		
Gulf	Whittenburg 2-D Sec 27, Blk 47	480*	163	80,151	.....
Huber	Cheatham 1-A Sec 38, Blk Y	80	NP	3,127,252	39.1
Huber	Devore-Johnson Sec 22, Blk Y	40*	198	1,465,005	37.6
Huber	Devore 1 Sec 28, Blk Y	40*	NP	3,694,369	92.3
Huber	Dumas-Johnson 1 Sec 22, Blk Y	10*	199	4,832,312	483.2

Huber	Kelly-Johnson Sec 30, Blk Y	80	197	3,447,484	43.1
Huber	McIlroy 1 Sec 28, Blk Y	20	192	4,168,170	208.4
Huber	Penny 1-A Sec 35, Blk Y	40	178	5,397,708	134.9
Huber	Penny A-2 Sec 35, Blk Y	200*	192	2,613,498	13.0
Huber	Pure 1 Sec 29, Blk Y	260	NP	1,613,739	6.2
Huber	Sanford 1-A Sec 78, Blk 46	80*	192	4,399,416	55.0
Huber	Sanford 1-B Sec 81, Blk 46	80*	180	4,122,660	51.6
Huber	Weatherly 1 Sec 26, Blk Y	320	192	1,124,998	3.5
I. T. I. O.	Johnson 2 Sec 20, Blk Y	40	Dead)	6,576,609	164.5
I. T. I. O.	Johnson 4 Sec 20, Blk Y	.....	NP)		
Magnolia	Herring 1 Williams	935	386	.....	.....
Means	Means 1 Sec 10, Blk Y	10	.....	.....	.....
Muen Rio	Sanford 1 Sec 82, Blk 46	40?	191	3,184,873	79.6

[fol. 645]

Murphy	Watkins 1 Sec 10, Blk M-21	60*	NP	.....	.....
Middleton	Weatherly 2 Sec 18, Blk Y	60	156	.....	.....
Paramount	Sanford 1 Sec 82, Blk 46	80*	168		
Paramount	Sanford 2 Sec 82, Blk 46	.....	190	18,821,696	235.2
Paramount	Sanford 3 Sec 82, Blk 46	*	162		
Phillips	Andorf 1 Sec 80, Blk 46	80*	212	193,387	2.4
Phillips	Chapp 2 Sec 78, Blk 46	40*	209	410,589	10.2
Phillips	Chapp 3 Sec 78, Blk 46	40*	NP	676,936	16.9
Phillips	Clair 1 Sec 1, Tomlinson	80	346	1,033,955	12.9
Phillips	Coble 10 Sec 13, Blk Y	400	180	1,613,193	4.0
Phillips	Dave 1 Sec 70, Blk 46	140*	170	1,755,872	12.5
Phillips	Dave 2 Sec 70, Blk 46	*	170		
Phillips	Elva 5 Sec 3, Tomlinson	.....	170		
Phillips	Elva 6 Sec 3, Tomlinson	498*	160		
Phillips	Elva 7 Sec 3, Tomlinson	*	185	5,834,167	11.7
Phillips	Elva 14 Sec 3, Tomlinson	*	190		
Phillips	Elva 15 Sec 3, Tomlinson	*	175		
Phillips	Felix 1 Sec 77, Blk 46	40*	195	437,969	10.9
Phillips	Ford 3 Sec 28, Blk Y	160*	NP	1,010,797	6.3

*This well was originally completed as an oil well.

EXHIBIT 16—Continued

West Panhandle Field

Details of Gas Production—Sour Gas Wells Not Owned by Nor Connected to Gas Pipeline Companies

Hutchinson County (Continued)

Company	Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Phillips	Garland 1 Sec 77, Blk 46	*	191		
Phillips	Garland 2 Sec 77, Blk 46	80*	NP	3,838,363	47.9
Phillips	Garland 3 Sec 77, Blk 46	*	NP		
Phillips	Garland 4 Sec 77, Blk 46	*	197		
Phillips	Gibson-Whitt 2 Mary Whitley	*	160		
Phillips	Gibson-Whitt 4 Mary Whitley	160*	170		
Phillips	Gibson-Whitt 5 Mary Whitley	*	150	1,320,098	8.3
Phillips	Gibson-Whitt 7 Mary Whitley	*	163		
Phillips	Gibson-Whitt 11 Mary Whitley	*	152		
Phillips	Glass 1 Sec 80, Blk 46	200*	188	3,752,521	18.7
Phillips	Gowland 1 Sec 22, Blk Y	40*	NP	9,692,082	242.3
Phillips	Hagy 1 Sec 74, Blk 46	80	196	2,803,311	35.1
Phillips	D. Jay 1 Sec 40, Blk 47	640	250	2,650,008	4.1
Phillips	Land 1 Sec 83, Blk 46	20*	185	2,788,931	139.4
Phillips	Land 2 Sec 83, Blk 46	20*	185	13,462,196	673.1
Phillips	Mayer 1 Sec 37, Blk Y	160	188	1,042,355	6.5
Phillips	McMillan 1 Sec 82, Blk 46	80	193	575,804	7.2
Phillips	Operators 1 Sec 82, Blk 46	40	185	4,394,814	109.8
Phillips	Operators 2 Sec 82, Blk 46	40*	165	2,069,565	51.7
Phillips	Otis 1 Sec 82, Blk 46	40*	182	3,526,552	88.1
Phillips	Otis 2 Sec 82, Blk 46	40*	191	696,399	17.4
Phillips	Patton 2 Mary Whitley	480*	150	78,125	.....
Phillips	Pool 1 Sec 82, Blk 46	40*	182	6,163,720	154.1
Phillips	Pool 2 Sec 82, Blk 46	*	.....		
Phillips	Rudy 1 Sec 30, Blk Y	40	188	14,125,478	353.1

*This well was originally completed as an oil well.

Phillips	Sanford 1 Sec 1, B&B	280	284	1,640,994	5.9
Phillips	Williams 1 Sec 43, Blk 47	640	257	2,212,087	3.5
Phillips	Yake 2 Sec 36, Blk 47	160*	207	1,530,014	9.6
Phillips	Yake 3 Sec 36, Blk 47	160*	204	160,007	1.0
Phillips	Yake 4 Sec 36, Blk 47	160*	NP	.....	.....
Shell	Jasper 1 Sec 6, Blk M-26	230*	128	362,805	1.6
[fol. 646]					
Shell	Smith 1-A Sec 14, Blk Y	*	90		
Shell	Smith 3-A Sec 14, Blk Y	40*	80	3,287,195	82.2
Shell	Smith 4-A Sec 14, Blk Y	*	90		
Sinclair	Johnson A-14, Sec 21, Blk Y	*	Dead		
Sinclair	Johnson A-15 Sec 21, Blk Y	*	154		
Sinclair	Johnson 25 Sec 21, Blk Y	320?	NP		
Sinclair	Johnson 26 Sec 21, Blk Y	*	152	9,642,251	30.1
Sinclair	Johnson 28 Sec 21, Blk Y	*	NP		
Sinclair	Johnson 34 Sec 21, Blk Y	*	152		
Sinclair	Johnson 47 Sec 21, Blk Y	*	157		
Sinclair	Johnson 62 Sec 22, Blk Y	40*	146	932,594	23.3
Sinclair	Johnson 69 Sec 28, Blk Y	100*	182	4,160,835	41.6
Sinclair	Johnson 70 Sec 28, Blk Y	100*	186	2,355,937	23.5
Sinclair	Johnson 4-B Sec 69, Blk 46	40*	155	190,409	4.8
Sinclair	Johnson 12-B Sec 69, Blk 46	40*	NP	89,312	2.2
Sinclair	Merchant 1 Sec 37, Blk 47	*	262	.....	.....
Sinclair	Merchant 2 Sec 37, Blk 47	320*	254	6,336,433	19.8
Sinclair	Merchant 3 Sec 37, Blk 47	*	266		
Sinclair	Merch-Vacuum 1 Sec 37, Blk 47	.....	207		
Sinclair	Merch-Vacuum 3 Sec 37, Blk 47	320*	257	5,982,546	18.7
Sinclair	Merch-Vacuum 4 Sec 37, Blk 47	*	NP		
Sinclair	D. Shaw B-1 Sec 27, Blk Y	213	200	280,846	1.3
Sinclair	D. Shaw 4 Sec 27, Blk Y	213*	184	1,723,392	8.1
Sinclair	D. Shaw 5 Sec 27, Blk Y	213*	172	187,487	0.9
Sinclair	Whittenburg 3-A Mary Whitley	50*	156	1,175,932	23.5
Sinclair	Weatherly 3 Sec 23, Blk Y	213*	165	872,306	4.1
Sinclair	Whittenburg 1-B Mary Whitley	50?	160	1,332,764	26.6

*This well was originally completed as an oil well.

EXHIBIT 16—Continued

[fol. 646]

West Panhandle Field

Details of Gas Production—Sour Gas Wells Not Owned by Nor Connected to Gas Pipeline Companies

Hutchinson County (Continued)

Company	Well Name & No., Sec. & Blk.	Acres Held by Well	Rock Press. R. R. Comm.	Cumulative Prod. thru July 31, 1935 M. C. F.	Avg. Prod. per Acre Millions cu. ft.
Skelly	Johnson 1-B Sec 30, Blk Y	160*	185	7,537,119	47.1
Skelly	Johnson 6 Sec 20, Blk Y	160	124	11,050,386	69.1
Skelly	Sanford 1 Sec 82, Blk 46	40*	176	4,213,755	105.3
Stanolind	Merchant 2 Sec 38, Blk 47	10*	NP	171,964	17.2
Stanolind	Merchant 3 Sec 38, Blk 47	10*	NP	31,836	3.2
Stanolind	Barnhill 1 Martinez	1,320	NP	.....	.....
S & W	Cockrell 2 Sec 4, Blk B-3	80*	170	6,983,563	87.3
Texas Co.	Garner 3 Sec 122, Blk 4	160	174	372,220	2.3
Williams	Sanford 1 Sec 80, Blk 46	80*	NP	10,435,649	130.6
Total 149 Wells		16,825 (Avg. 114 wells)	175	341,285,524	20.3

Moore County

Barnsdall (Sunray)	Jones 1 Sec 164, Blk 3-T	80*	400	7,897,008	98.6
Continental	Brown 1 Sec 172, Blk 3-T	160	.....	1,956,615	12.2
Dana	Utey 1 Sec 135 Blk 3-T	320	NP	.....	.....
Gulf	Burnett 1 Sec 356, Blk 44	1,120*	400	556,106	0.5
Home Gas Co.	Reeder 1 Sec 191, Blk 3-T	80*	405	1,814,623	22.7
Humble	Bridges 1 Sec 252, Blk 3-T	1,280	425	.....	.....
Magnolia	Neild 1 Sec 361, Blk 44	320	400	596,230	1.9
Magnolia	Jones 2 Sec 170, Blk 3-T	160*	NP	16,514	.....
Magnolia	Jones 3, Sec 170, Blk 3-T	160*	NP	.....	.....

* This well was originally completed as an oil well.

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Phillips	Flynn 1 Sec 179, Blk 3-T	640	423	.....	.....
Phillips	James 1 Robinson	*	310		
Phillips	James 2 Robinson	800*	320	1,741,954	2.2
Phillips	James 4 Robinson	*	300		
Phillips	Stella 1 Sec 192, Blk 3-T	640	401	2,805,039	4.4
Phillips	Wilson 1 Sec 157, Blk 3-T	320	422	.....	.....
Phillips	Wilson 2 Sec 157, Blk 3-T	320	365	.....	.....
Shamrock	Burnett 1 Sec 359, Blk 44	80	375	2,088,329	26.1
Shamrock	Brumley 2 Sec 360, Blk 44	640*	382	1,275,226	2.0
Shamrock	Coffee 1-A Sec 355, Blk 44	200*	383	1,596,759	7.9
Shamrock	Coffee C-1 Sec 361, Blk 44	160*	406	1,488,209	9.3
Shamrock	Coffee C-2 Sec 355, Blk 44	200*	NP	7,339,649	36.6
Shamrock	Brumley 1 Sec 360, Blk 44	320*	395	564,569	1.8
Shamrock	Jones 1 Sec 169, Blk 3-T	80*	410	13,671,760	170.9
Shamrock	Robertson 1-A Sec 400, Blk 44	160*	405	4,359,828	27.2
Shamrock	Robertson B-1 Sec 165, Blk 3-T	160*	408	3,903,707	24.4
Shamrock	Robertson B-2 Sec 165, Blk 3-T	160*	409	198,284	1.2
Shamrock	Rupert 1 Sec 191, Blk 3-T	280	405	3,298,859	12.9
Shamrock	Shary 1 Sec 187, Blk 3-T	480	406	4,016,636	8.4
Skelly	Armstrong 6 Proctor	320*	305	9,046,656	28.2
Skelly	Armstrong 7 Proctor	320*	305	4,436,700	13.9
Skelly	Armstrong 8 Proctor	320*	310	10,398,398	32.5
Skelly	Armstrong 9 Proctor	320*	305	5,789,298	18.1
Skelly	Armstrong 10 Bazemore	1,476*	320	3,643,026	2.5
Skelly	Armstrong-Byrd 2 Bellows	1,920	370	3,353,582	1.7
Sunray	Reeder 1 Sec 191, Blk 3-T	120*	405	1,327,515	11.0
Sunset	Dore 1 Sec 318, Blk 44	320	370	.....	.....
Sunray	Jones A. 1 Sec 164, Blk 3-T	40*	NP	18,690,956	467.2
Sunset	Brumley 1 Sec 360, Blk 44	320*	.....	892,998	2.8
Total 38 Wells		14,796	376 (Avg. 31 Wells)	118,765,033	8.0

[fol. 648] EXHIBIT 20

Railroad Commission of Texas

Oil and Gas Division

Oil and Gas Docket No. 108

In re Conservation and Prevention of Waste of Sweet and Sour Gas in the Panhandle District of Texas

Austin, Texas, December 10, 1935.

Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas

Whereas, In conformity to House Bill No. 266, passed at the Regular Session of the Forty-fourth Legislature of the State of Texas the Commission after due notice has held public hearings on and before the twentieth (20th) day of each calendar month, including the hearing held in Austin, Texas, on November 19th to 21st, 1935, inclusive, with respect to the existence and imminence of waste of sweet and sour natural gas in the state of Texas, and preventions thereof, and

Whereas, From the records of the Commission and witnesses heard at the various hearings, and from intensive and comprehensive study of this field through its Engineering Staff, and from a personal study and investigation by the Commission, the Commission finds:

The Panhandle oil and gas field structure lies along a buried mountain range known geologically as the Amarillo Arch, that extends along the length of the field, continuing in a southeasterly course into the southwesterly portion of Oklahoma, where it comes to the surface as the Wichita Mountains, at an elevation of approximately 1000 feet above sea level. The field is a belt lying in a southeasterly northwesterly direction and extends from eastern Wheeler County to northern Moore County, Texas. It is approximately 124 miles in length with an average width of approximately 20 miles, containing 1,504,386 acres; there being 1,066,662 acres of sweet gas, and 437,724 acres of sour gas territory. The field is located in the counties of Hartley, Moore, Hutchinson, Potter, Carson, Gray and Wheeler.

The oil producing area covers a belt about 90 miles in length lying on the northeast flank of the structure.

The oil and gas so far encountered in the Panhandle Field has been found, with minor exceptions, in four separate strata, namely: the dolmite, the arkosic-dolmite, the gray limestone, and the granite wash. These four formations overlie one another, and though they are normally separated one from another by impervious strata, they are interconnected as is shown by the fact that the virgin pressure of the oil and gas from all of them was 430 pounds per square inch at sea level, regardless of the location in the field.

Gas was first discovered in northern Potter County, Texas, in December, 1918, and was encountered at a depth of 2,605 feet. The gas production for several years was developed only incidentally in the search for oil. The first important oil was discovered in 1925 and the major oil pools were developed in 1926 and 1927. The development [fol. 649] of the gas field became prominent about 1926, and continued until 1929 when it was temporarily halted by the "depression." Since 1933, the gas field has been developed at a very rapid rate.

The oil wells in the oil pools in the field were, as a general rule, drilled through one or more gas-containing strata before entering the oil-containing stratum, and, in many instances, the wells were so completed as to cause production of gas from the gas strata along with the oil and gas from the oil stratum, with the result that tremendous quantities of gas have been produced from the oil, large portions of it coming from gas-producing strata above the oil-producing strata. This gas was in large part blown into the air, and it has been estimated that in excess of two trillion cubic feet of gas produced in this manner has been wasted into the air.

Coincident with the development of the Borger pool, casinghead gasoline plants were erected therein in which considerable portions of the gas produced therein were processed for the extraction of the gasoline content thereof, and, there being no market for the stripped gas, called "residue gas," resulting from the operations of said plants, the bulk of such residue gas was wasted into the air. In varying degrees, the same is true of the other oil pools as they were developed and operated.

The Panhandle Field is so far removed from centers of population and industrial activity that little value was at first placed upon the enormous quantities of gas therein found, but, due to the development of the casinghead gasoline plants and the resultant abundant supply of cheap residue gas that was being wasted into the air, the carbon black industry was attracted to the area, and in September, 1926, the first carbon black plant was completed. It was located in the Borger pool, and proceeded to burn considerable quantities of such residue gas for the manufacture of carbon black. Thirty additional carbon black plants have since been built and placed in operation in the field. The combined throughput capacity of said plants is approximately 570,000,000 cubic feet of gas daily. In excess of 70 per cent of the carbon black manufactured in the United States is being manufactured in the Panhandle Field.

There are, at the present time, 1090 natural gas wells in this field. These wells have a total daily open-flow potential of 17,231,183 M. C. F. Of this total 225 wells produce sour gas and these wells have a total open-flow potential of 2,099,985 M. C. F. daily. In the oil producing belt there are 2,527 oil wells producing from 27 different pools.

Development throughout the Panhandle Field has long since proved it to be the largest known reserve of natural gas in the United States. The demand for gas for light and fuel uses was local and was relatively small, prior to 1926.

The construction of pipe lines began in January, 1926, when the Northern Texas Utilities Company started transporting gas to towns in northern Texas, the principal one of which was Wichita Falls. In July of 1927, the Lone Star Gas Company started running gas in Northern Texas, principally into Ft. Worth and Dallas. In the early part of [fol. 650] 1928, the South Plains Pipe Line Company and the Cities Service Gas Pipe Line Company started transporting gas from this field, the former into towns south of Amarillo in West Texas, and the latter to Kansas City, Missouri. In June of that Year, the Canadian River Gas Company began transporting gas into Colorado, principally into the cities of Denver and Pueblo. In November of that year, Texas Panhandle Gas Company began using its line to transport gas into Oklahoma and to Wichita, Kansas. There was relatively little development by pipe lines from this time until June of 1931, when the Panhandle Eastern

Pipe Line Company began transporting gas through its line as far as Indianapolis, Indiana.

In October of 1931, the Texoma Natural Gas Company began its operations. The gas transported by this line was carried to markets in Nebraska, Iowa, and Illinois, the principal market being Chicago and its vicinity. In May of 1932, the Northern Natural Gas Company began its operations in which it transported gas into Nebraska and Iowa, principally into the towns of Des Moines, Iowa, and Minneapolis and St. Paul, Minnesota.

The total length of these nine major pipe lines approximates 4,425 miles and the total capacity thereof is approximately 1,000,000,000 cubic feet of gas per day. A daily average of approximately 300,000,000 cubic feet of gas was transported from the Panhandle Field through these lines during the year 1933 and a daily average of approximately 400,000,000 cubic feet of gas was being transported through said lines during the year 1934; and the daily average amount being transported therethrough at the present time is approximately 450,000,000 cubic feet.

These major pipe line companies acquired and now hold under lease approximately 850,000 acres of land, which is about 61 per cent of the total gas-producing area in the Panhandle Field, each such company separately owning and operating its own leases. Of the total area proven productive of sweet gas, these major companies own approximately 80 per cent. They have not and are not taking or transporting sour gas through their lines. Unless such gas is treated, it is not suitable for light, fuel and domestic uses. The demand for sour gas for light and fuel uses is restricted to isolated lease purposes.

Six or seven of the major pipe line companies have produced and transported to the markets gas produced from only their own gas leases (or the leases of their respective affiliated or subsidiary companies), and have not purchased gas from other lease owners in the field. Prior to and since the passage of said Act, many of the unconnected lease-owners have repeatedly endeavored to induce these companies to purchase gas from their lands, but without avail. Some of these companies have been and are willing to purchase gas ratably in the field, if all the others would do so, and two companies, have made thirty (30) new connections and are taking ratably from these connections.

In addition to the major pipe lines there are ten additional pipe lines of lesser capacities serving local towns and cities in the immediate vicinity of the field with a throughput capacity of approximately only 65,000,000 cubic feet of gas per day. For the most part, these small pipe line companies own their own leases and supply their requirement therefrom, although some of them purchase some of their requirement from other lease owners. Nevertheless, a very large number of separately owned leases have [fol. 651] remained without connections with market outlets. In fact, there are more than 90 gas wells that have never had a connection. The pipe line companies, large and small, have taken up all the markets economically and practically available for sweet gas from the Panhandle Field, and their control thereof constitutes a virtual, if not an actual, monopoly of said markets.

The policy of most of the pipe line companies operating in this field to take gas from only those wells which they owned, to the exclusion of the other operators in the field has resulted in a protracted controversy between them and those operators in this field without a market. This controversy resulted in the passage by the Legislature of the State of Texas of a number of bills, all of which had as their purpose the protection of the right of those operators to sell their gas. In 1931, the Forty-second Legislature passed what is known as the Common Purchaser Act. This law required that pipe line companies taking gas in the state should be considered as a common purchaser and should take gas ratably under conditions which should be prescribed by the Railroad Commission of Texas. As a result of this Act, the Railroad Commission issued orders which had the effect of requiring the distribution of the markets of the pipe line companies among the various producers in the field in proportion to the daily open-flow potentials of the wells owned by these producers. This law was attacked by several of the gas pipe line companies in the United States District Court for the Western District of Texas and the Statute and the Orders of the Railroad Commission issued thereunder were stricken down.

As a result of the failure of the Common Purchaser Act, the Second Called Session of the Forty-second Legislature passed an act which provided that the Railroad Commission should determine the market demand for any particu-

lar field and should allocate the production in their field among the various producers to meet this market demand. The Orders entered by the Railroad Commission as a result of this Act were again attached by the same pipe line companies in the United States District Court for the Western District of Texas and were stricken down.

As a result of the failure of these Legislative attempts to obtain ratable production, there was passed by the First Called Session of the Forty-third Legislature a bill known as the Stripping Law or the Sour Gas Bill. This bill, in effect, gave to the Railroad Commission the power to permit the use of natural gas for any beneficial purpose. Before the passage of this bill, it had been the policy of the Railroad Commission to permit the use of casinghead gas only in stripping operations, but after its passage, the Railroad Commission began issuing permits to strip dry natural gas. As a result of the issuing of these permits, a number of gasoline plants were built and began to operate in the field.

During the fall of 1933 and the year of 1934, five gasoline extraction plants were built and began operation. In addition, most of the gasoline plants which had been operating entirely on casinghead gas were converted into stripping plants. As a result of these developments, by the fall of 1934, in excess of one billion cubic feet of gas was being blown into the air daily. These operations so rapidly depleted the gas field that it soon became evident that some other solution of the problem must be obtained. Hence, [fol. 652] in the spring of 1935, the Forty-fourth Legislature passed a comprehensive conservation Statute known as House Bill No. 266, the purpose of which was to prevent waste and compel ratable production. Section 10 of this Bill states:

"It shall be the duty of the Commission to prorate and regulate the daily gas well production from each common reservoir in the manner and method herein set forth. The Commission shall prorate and regulate such production for the protection of public and private interests.

"(a) In the prevention of waste, as "waste" is defined herein.

"(b) In the adjustment of correlative rights and opportunities of each owner of gas in a common reservoir to produce and use or sell such gas as permitted in this article."

The "waste" referred to above is defined in Section 3, of House Bill No. 266, to specifically include:

(a) The operation of any oil well, or wells, with an inefficient gas-oil ratio.

(b) The drowning with water of any stratum or part thereof capable of producing gas in paying quantities.

(c) Underground waste or loss however caused and whether or not defined in other subdivisions hereof.

(d) Permitting any natural gas well to burn wastefully.

(e) The creation of unnecessary fire hazards.

(f) Physical waste or loss incident to, or resulting from, so drilling, equipping, or operating well or wells as to reduce or tend to reduce the ultimate recovery of natural gas from any pool.

(g) The escape into the open air, from a well producing both oil and gas, of natural gas in excess of the amount which is necessary in the efficient drilling or operation of the well.

(h) The production of natural gas in excess of transportation or market facilities, or reasonable market demand for the type of gas produced.

(i) The use of natural gas for the manufacture of carbon black without first having extracted the natural gasoline content from such gas.

(j) The use of sweet gas produced from a gas well for the manufacture of carbon black.

(k) Permitting any natural gas produced from a gas well to escape into the air before or after such gas has been processed for its gasoline content.

(l) The production of natural gas from a well producing oil from a stratum other than that in which the oil is found, unless such gas is produced in a separate string of casing from that in which the oil is produced.

(m) The production of more than one hundred thousand (100,000) cubic feet of gas to each barrel of crude petroleum oil unless such gas is put to one or more of the [fol. 653] uses authorized for the type of such gas so produced under allocations made by the Commission.

Whereas, From testimony adduced at hearings heretofore mentioned, the Commission finds that:

1. Unless the withdrawals from a common reservoir are restricted and distributed uniformly, waste will result from one or a combination of the following conditions:

(a) Water channeling and coning.

(b) Loss of energy by permitting unnecessary subsurface expansion of gas without doing useful work.

(c) Failure to recover the greatest ultimate quantity of gas.

(d) Dissipation of gas energy in areas adjacent to oil bearing sands in the same common reservoir.

2. In order to approach uniform withdrawals from a common reservoir, the gas must be taken ratably with respect to market demand.

3. If there is ratable taking of gas from a common reservoir based on a reasonable market demand for such gas, correlative rights and opportunities of the owners of gas wells in such reservoir will be substantially in adjustment; and disproportionate withdrawals on the part of any operator will be prevented.

Elaborating on the above findings as they apply to the Panhandle Field, from testimony adduced at hearings and from a study by its Engineering Staff, the Commission finds that:

(a) Evidence was offered to show that petroleum oil and natural gas originated from the distillation of organic matter deposited in sedimentary rocks laid down under water conditions; that after the distillation of the organic materials into oil and gas, the water, oil and gas segregated in porous strata started arranging themselves in accordance with their densities; that due to the buoyant force caused by the different specific gravities of water, oil and gas, the lighter oil and gas migrated upward in the water contain-

ing porous strata, interbedded between impervious strata. As the oil migrated upward it became entrapped in structures, after displacing the water contained therein during the process of accumulation. Because of the inclination of the water filled porous strata, interbedded between impervious strata, the oil and gas deposits were accumlated under hydrostatic pressure.

Water contained in the same strata or zone which is adjacent to an oil or gas deposit is called "edge water," and the force that this water imparts to the oil or gas deposit is called "water drive." In the various fields in Texas, edge water imparts a force from a few hundred pounds per square inch in some fields up to pressures in excess of 2500 pounds per square inch in other fields. Where the volumetric withdrawals from a reservoir is greater than the encroachment of the edge water, the pressure of the reservoir decreases proportionately. Unless the edge water pressure or water drive is substantially controlled by uniform withdrawals from a common reservoir, water channeling and water coning will result, and have resulted, in the trapping of oil and gas deposits which may never be recovered, thereby causing underground waste.

[fol. 654] The oil and gas in the Panhandle Field is under a hydrostatic water drive pressure, and the water adjacent to the oil and gas has a nearly constant composition. In the initial stages of development of the field the water pressure imparted to the oil and gas body a pressure of 430 pounds per square inch. But since the volumetric amounts of oil and gas withdrawals in certain parts of the field have greatly exceeded the ability of the water to encroach, this condition has developed low-pressure areas in regions of greatest withdrawals. The rapid withdrawals in various parts of the field have caused an irregular uneven encroachment of the water, resulting in water channeling and water coning in several places, thereby creating conditions of waste. The testimony shows that there are a number of oil and gas wells in this field which were formerly free from water, and which are now producing water in varying amounts.

(b) Natural gas differs from most other mineral resources in that it is used largely as a source of energy, and when used as such, has no other value except a source of energy. The energy which natural gas possesses and which

is available for use is of two kinds: First, the heat energy released on the combustion of the gas; and second, the work energy which may be produced on expansion of the gas. The latter type of energy is dependent not only upon the quantity of but also upon its pressure. Conservation of this type of energy is important when the pressure in the gas reservoir is below the maximum pressure which can be maintained in the pipe lines. Waste of this energy will occur by any method of production which delivers the gas at the surface at less than the maximum possible pressure. The most economical method of producing gas from this point of view is that method which produces the gas at the highest pressure. Conversely, the most wasteful method is that method which produces the gas at the lowest pressure.

When gas is withdrawn rapidly from a gas reservoir there is formed around the well a region of high pressure gradient. The magnitude of this pressure gradient will depend upon the velocity of the gas, and upon the thickness and permeability of the sand. The greater the velocity of the gas the thinner and less permeable the sand the lower will be the pressure at which the gas is delivered into the well. As rapid withdrawal from the well is continued the region of low pressure spreads out from the well until a relatively large area around the well bore will be at a low pressure. This secondary effect is dependent not only upon the rate of withdrawals from an individual well, but also the number of wells withdrawing from a particular concentrated region in the reservoir. Both of these effects are increased by unequal or non-ratable withdrawals from the gas reservoir, and in either case there will be a loss of the work energy of the gas because the gas will be delivered into the line at lower than the highest possible pressure. [fol. 655] The Commission finds from a study made by its Engineering Department that the irregular and non-ratable withdrawals which have occurred in this field in the past have already created low pressure areas, and the expenditure of considerable quantities of gas is required to replace the work energy lost when this gas is thus produced at less than the maximum pressure.

(c) When a gas field has been incompletely or irregularly developed and gas is accordingly taken from comparatively few wells, the pressure at those wells will be reduced so low that the wells will have to be abandoned while a consider-

able quantity of gas still remains in the reservoir. The pressure of this residual gas, however, will usually be so small that there will be no inducement to drill additional wells in the reservoir to recover it, and it will be irretrievably lost.

The Commission finds that in the Panhandle Gas Field, particularly in the western portions of this field, there are large areas which do not at the present time contain any gas wells. If the present system of non-ratable withdrawals from this field is permitted, a greater portion of this undrilled area will probably never be developed, with a consequent loss in the total amount of recoverable gas.

(d) Where a gas-bearing stratum also contains oil, control of the withdrawals from a gas-bearing stratum is usually of particular importance; first, because of the gas energy necessary to deliver the oil in the oil-bearing stratum into the oil wells; and, second, because if the pressure in the gas-bearing sands is reduced below that in the oil-bearing sand migration from the oil-bearing sand into the gas-bearing sand will occur and a large quantity of the oil used to saturate the heretofore dry sands can never be recovered. To prevent these waste- of oil, it is important to control the rates of withdrawal from the gas-bearing strata both as to the whole and as to the particular regions in the field.

In order to approach uniform withdrawals from the Panhandle Field, the gas must be taken ratably with respect to the reasonable market demand. In establishing ratable production, it is necessary for the Commission, first, to determine an efficient drainage area, and second, to devise a fair and uniform system of proration to be applied to the field. The Commission finds that these purposes can be more effectively carried out by separating the Panhandle Sweet Gas Field into two separate common reservoirs, one of which zones shall be known as the East Panhandle Field, and the other of said zones shall be known as the West Panhandle Field. The point of division between said two fields shall be a line which runs due north and south through the Panhandle Field along the east line of Sections 8, 9 and 10, of Block 3, I & G N RR Survey, Gray County. This line extends southward through the field and through the city of LeFors and changes its course southwestward to the northwest corner of Section 6, Alexander Crane Survey,

Block 1, and from that point southward approximately through the east side of Sections 3, 4, 5 and 6, straight southward through the remaining portion of the field. This line passes through the east line of Sections 2, and 3, Block "H" A. Wallace Survey, all in Gray County, Texas.

[fol. 656] The Commission finds that these two zones should be established because of an intervening structural restriction which does not permit the free intermingling of gas and the corresponding equalization of pressures between fields. This structural restriction results from a down-faulted block occurring south of an east-west fault, which roughly coincides with the north boundary line of the A C H & B Survey, Block 1, Gray County for approximately ten (10) miles. Along the south side of this fault the corresponding pay horizons have been faulted down below the water level. The 25 or 30 wells which have been drilled south of this fault have either encountered water, or oil and gas in non-commercial quantities, thus showing there cannot be free intermingling of gas south of the fault from one field to the other. North of the fault the area has been drilled for oil to a density of approximately one well to each ten (10) acres. As a result of the heavy withdrawals from those oil wells, their reservoir pressures have declined to a relatively low pressure per square inch along this narrow strip. Accordingly, this low pressure area north of the fault acts as a barrier against the migration of gas from one field to the other.

The Commission has had tests carried out by its Engineering Department for the purpose of establishing a line of demarcation between the sweet and sour gas areas in the Panhandle Field. As a result of these tests it was found that this line of demarcation was very sharp, in that most of the wells in this field contained either a little or no hydrogen sulfide, or a high concentration of hydrogen sulfide. The line of demarcation thus established begins at the southern edge of the approximate boundary of production of the Panhandle Gas Field at Section 19, Block 25, G & M survey, Hartley County, and travels northwest to Section 12, Block 2, G & M Survey, Hartley County, changes its course to the northeasterly direction to Section 71, Block 44, H & T C Survey in Moore County; thence, north to Section 319, Block 44, H & T C Survey in Moore County where it changes to a southeasterly direction across Hutch-

inson, Carson and Gray Counties, to the northern approximate boundary of production of the field, Section 88, Block 3, I & G N Survey in Gray County. Those wells which produced oil were quite frequently found to contain hydrogen sulfide even though they lay south of the line of demarcation established for the dry gas wells; hence, separate tests had to be made on those high gas-oil ratio wells which lay south of the line separating the sweet and sour gas areas.

The Commission finds that the efficient drainage area of a gas well in the East Panhandle Field, producing at twenty-five (25%) per cent of the daily producing capacity is one hundred and sixty (160) acres. Acreage surrounding any well in excess of that amount, therefore, should not be taken into account in allocating the allowable production among the various wells located in said field.

The evidence introduced at the hearings did not satisfy the Commission that wells located in the West Panhandle Field have an efficient drainage area substantially different from those located in the East Panhandle Field. The Commission does find, however, that on account of the lack of [fol. 657] diverse fee and lease ownerships in said West Panhandle Field and the widely spaced drilling program which has been followed in said field, it is equitable under present conditions to fix an acreage factor to be used in allocating allowable production among wells in said West Panhandle Field substantially larger than that which is fixed for the East Panhandle Field, and that no substantial inequities and injustices to operators in either of said fields will be occasioned by such acreage factor being adopted for the West Panhandle Field. For this reason, therefore, the Commission finds that the efficient drainage area of a gas well located in the West Panhandle Field, under present conditions, is six hundred forty (640) acres. This drainage area is applicable to both the sour and sweet gas producing wells.

The Legislature, in setting up the method to be followed by the Commission in fixing the daily allowable production for each gas well in a common reservoir says that it shall take into consideration "The size of the tract segregated with respect to surface position and common ownership upon which such a gas well or wells are located; the relation between the daily producing capacity of each gas well and the aggregate capacity of all the gas wells producing

the same kind of gas in the same common reservoir or zone; and all other factors which are pertinent."

Various formulae have been suggested to the Commission for prorating gas in the Panhandle Field, and among these are:

(a) The ratio of the acreage on which any well is located, to the sum of the acreages of the various producing units in any field. (A)

(b) The ratio of the daily producing capacity of each gas well to the sum of the daily producing capacities of all the gas wells in the field. (P)

(c) The ratio of the product of the daily producing capacity of the well and the acreage upon which it is located to the sum of the products of the daily producing capacity of all the wells in the field and the acreages of the tracts upon which they are located. (AXP)

(d) Fifty (50%) per cent of the field outlet to be allocated on the ratio of the individual well acreage to the sum of the total well acreages in the field; and fifty (50%) per cent upon the ratio of the individual well potential to the sum of the total field potential.

(e) Seventy five (75%) per cent of the field outlet to be allocated on the ratio of the individual well acreage to the sum of the total well acreages in the field; and twenty-five (25%) per cent upon the ratio of the individual well potential to the sum of the total field potential.

(f) Ninety (90%) per cent of the field outlet to be allocated on the ratio of the individual well acreage to the sum of the total well acreages in the field; and ten (10%) per cent upon the ratio of the individual well potential to the sum of the total field potential.

[fol. 658] It is the opinion of the Commission that it cannot use the formulae (a), (b), and (c), listed above, because formulae (a) and (c) do not take into consideration the relationship between the daily producing capacity of each gas well and the aggregate daily producing capacity of all gas wells producing the same kind of gas from the same reservoir, and (b) does not take into consideration the size of the tract upon which the well is located.

All of the formulae listed above have been given due consideration and study by the Commission, and the Commission has concluded that in the Panhandle Gas Field a formula which distributes fifty (50%) per cent of the market demand in proportion to the ratio of the daily open flow capacity of each well to the aggregate daily capacity of all the wells producing the same kind of gas in the same reservoir and fifty (50%) per cent of the market demand in proportion to the ratio of the acreage of the tract upon which each well is located to the sum of the acreages upon which the wells are located provided that no acreage shall be considered in excess of the above described efficient drainage areas will best accomplish the purposes for which proration was designed; that is, to prevent physical waste and to protect the correlative rights of the owners of gas wells in the field.

The aggregate lawful volume of open flow or daily potential capacity to produce sweet gas from both the West Panhandle Sweet Gas Field and the East Panhandle Sweet Gas Field is in excess of the daily reasonable market demand for such gas from such fields to be utilized for lawful purposes.

The aggregate lawful volume of open flow or daily potential capacity to produce sour gas from the west Panhandle Sour Gas Field is in excess of the daily reasonable market demand for such gas from such field to be utilized for lawful purposes. The Commission through its observations and tests have been unable to detect to date any sour gas in the East Panhandle Field.

The Commission finds that the reasonable lawful market demand for the East Panhandle Sweet Gas Field for the month of December and until otherwise ordered will be 181,174,000 cubic feet daily; the reasonable lawful market demand for the West Panhandle Sweet Gas Field for this period will be 608,552,000 cubic feet daily; the reasonable lawful market demand for the Sour Gas Field will be 451,137,000 cubic feet daily.

The Commission finds that the daily open-flow capacity, or relative ability to produce gas, of the wells in the above mentioned fields and zones to be in excess of the reasonable market demand; being as follows: East Panhandle Sweet Gas Field 6,727,629 cubic feet; West Panhandle

Sweet Gas Field, 7,613,843 cubic feet, and for the Sour Gas Field 1,648,848 cubic feet. (All in terms of MCF.)

Therefore, it is Ordered, That effective December 11, 1935, the gas-oil ratio of each well in the field shall be kept as low as possible, and no well producing both oil and gas shall be permitted to produce gas in excess of 10,000 cubic foot per barrel of oil produced unless specially authorized by an order of the Commission to vary therefrom. However, any well which by reason of its location, mode of completion, or necessity for total fluid lift, shall be allowed to produce daily a total volume of gas equivalent to that of any other well producing from the Panhandle Field proper, [fol. 659] so long as the ratio of gas to oil does not exceed that set by Statute. A gas-oil ratio determination shall be made on each well at the time of completion, and at the time of retest. Each operator shall furnish to the Commission's Deputy Supervisor at Pampa, Texas, a gas measurement to determine the gas-oil ratio thereof, on each of his wells, on forms furnished by the Supervisor, at least each ninety (90) days period, the beginning and ending of said period to be set by the Supervisor. The Supervisor shall furnish to the Commission, through its Engineering Department, a detailed report at the end of each period, to enable the Commission to restrict or increase the daily amount of gas production from oil wells in order that uniformity of withdrawals from the reservoir may be approached, and that lifting energy may be conserved. The Commission, therefore, reserves to itself the right to grant exceptions, after a hearing from their application in individual cases, and to fix gas-oil ratios, at either a lower or a higher proportion than is provided for herein, as to individual wells and as to individual leases and/or properties, as rapidly as the facts can be determined upon which to act, in order that the possibility of such physical waste as might reasonably be expected to result from the continuance of any improper gas-oil ratio that might exist or that might come into being may be prevented in an adequate manner.

It is Ordered, That the Panhandle Gas Field shall be divided into an East and West Panhandle Field, and that the West Field shall be divided into a sweet and sour zone. The point of division between the East and West Fields shall be a line which runs due north and south through the

Panhandle Field along the east line of Sections 8, 9 and 10, of Block 3, I. & G. N. Survey, Gray County. The line to extend southward through the city of LeFors and change its course southwestward to the northwest corner of Section 6, A. & C. Survey, Block 1, and from that point southward approximately through the east side of Section- 3, 4, 5, and 6, southward through the remaining portion of the field. This division to be flexible enough to work no hardships on any offset wells or properties. The West Field to be divided into a sweet and sour zone beginning at the southern edge of the approximate boundary of production of the Panhandle Field at Section 19, Block 25, G. & M. Survey, Hartley County, and traveling northwest to Section 12, Block 2, G. & M. Survey, Hartley County, and it changes its course to a northeasterly direction to Section 71, Block 44, H. & T. C. Survey, Moore County; thence north to Section 319, Block 44, H. & T. C. Survey in Moore County; thence extending in a southeasterly direction across Hutchinson and Gray Counties to the northern approximate boundary of production of the field at Section 88, Block 33, I. & G. N. Survey in Gray County. That portion of the field being on the north side of that line shall be the Sour Zone. Tests will be continually carried on by the Engineering Department under the supervision of a Chemical Engineer and using the latest approved method of testing, for the purpose of checking the line of demarcation between the sweet and sour zones of the field.

It is Ordered, That the reasonable lawful market demand for the East and West Panhandle Fields, and the sweet and sour zones shall be determined by nominations for the purchase or use of sweet or sour natural gas submitted to the Commission in affidavit form; the form to be furnished by the Commission. However, the Commis- [fol. 660] sion will at the end of each ninety (90) days, beginning December 11, 1935, reconcile the nominations with records kept by the Commission and determine the reasonableness of the demand, making the necessary rectification in the daily allowable gas production for the field and zones. At such times the Commission will also make adjustment for accumulating individual well allowables and for emergencies as provided for in Section 18 of House Bill No. 266.

It is ordered, That effective, 7 o'clock A. M., December 11, 1935, the daily allowable gas production, computed on the basis set forth in House Bill No. 266, is as follows:

East Panhandle Field.....181,174,000 cubic feet daily.
West Sweet Panhandle Field 608,552,000 cubic feet daily.
West Sour Panhandle Field..451,137,000 cubic feet daily.

It is ordered, That the daily allowable production of gas for individual wells in the East and West Panhandle Fields shall be determined by dividing the reasonable market demand into two parts, and that these parts shall be distributed to each well in proportion to the relative producing ability of these individual wells and the number of acres containing each of these wells, but in no case shall more than one hundred sixty (160) acres in the East Panhandle Field and not more than Six Hundred Forty (640) acres in the West Panhandle Field, in both sweet and sour zones, be allocated to any one well for the purpose of proration.

It it ordered, That the total daily allowable production of gas from gas wells in the East and West Panhandle Fields shall be distributed and prorated among the individual wells on the following basis and in the following manner, to-wit:

Fifty (50%) per cent of the reasonable market demand of the field shall be allocated on the ratio of the individual well acreage to the sum of the total well acreage in the field; and fifty (50%) per cent of the reasonable market demand of the field shall be allocated on the ratio of the individual well potential to the sum of the total well potentials in the field.

It is ordered, That the Commission will cause to be issued schedules setting forth, among other things, the company owning the individual well, the name of the lease, the well number, and the proven contiguous well acreage, the open-flow capacity, and the total daily allowable production in thousands of cubic feet. The Commission hereby directs all purchasers, well owners and operators, to notify the Commission within fifteen (15) days after receiving a copy of the schedule of any typographical errors or differences of any kind between the matters set forth and the records of the purchasers, well, owner and operators.

It is ordered, that each purchaser, pipe line company or gasoline plant operator taking gas from wells classified as

gas wells by the Commission shall prepare a monthly report upon forms furnished by the Commission (Form 3-266 A & B) according to instructions contained within the report. Among other things, said report shall contain the proven contiguous acreage under lease or contract on which the gas well is located, up to the maximum number of acres in the specified drainage area for the field.

It is ordered, That whenever natural gas in commercial [fol. 661] quantities, in a well defined gas-bearing stratum known to contain natural gas in such quantities is encountered in any well drilled for oil or gas, such gas shall be confined in its original stratum until such time as the same can be produced and utilized without waste, and all such strata shall be adequately protected from infiltrating water. The drowning with water of any stratum or part thereof capable of producing gas is strictly forbidden.

It is ordered, That where any new well is completed after issuance of schedules under this Order, or reconditioned well, or oil well plugged back and made a gas well, or any oil well exceeding the displacement gas allowance, or any oil well exceeding the specified gas-oil ratio and classed as a gas well, or a well that has been without a pipe line connection, capable of producing sweet or sour gas, such well until the next hearing of the Commission and the issuance of new allowables and schedules based thereon, shall be permitted to produce not in excess of 50,000 cubic feet of gas per day; provided the gas is to be utilized for purposes and uses authorized by law and the orders of the Commission. All gas wells shall be closed in until such time as such natural gas shall be utilized for purposes and uses authorized by law and the orders of the Commission. The Commission, however, will accept open-flow capacity tests, on the wells mentioned above, that are witnessed by the potential purchasers of the gas and the offset operator or by the well owner and the offset operator, between the semi-annual testing dates, July and January, but any discrepancy in test results found at the official test will be retroactive.

It is Ordered, That no gas shall be allowed to burn wastefully nor will the creation of fire hazards be allowed.

It is Ordered, That the rules of the Commission pertaining to the prevention of physical waste or loss incident to, or resulting from the drilling, equipping, or operating of

a well or wells as to reduce or tend to reduce the ultimate recovery of natural gas from any pool, must be adhered to.

It is Ordered, That the escape into the open air, from a well producing both oil and gas, of natural gas in excess of the amount that is necessary in the efficient drilling or operation of the well is strictly forbidden, and shall be governed by rules of the Commission.

[fol. 662] It is Ordered, That the production of natural gas in excess of transportation or market facilities, or reasonable market demand for the type of gas produced shall not be permitted, and is to be controlled by the Commission's determination of the reasonable market demand and the issuance of proration schedules.

It is Ordered, that the use of natural gas for the manufacture of carbon black without first having extracted the natural gasoline content from such gas, and that the use of sweet gas produced from a gas well for the manufacture of carbon black shall in no case be permitted.

It is Ordered, That no sour natural gas shall be used for the manufacture of carbon black in any plant which produces less than one pound of carbon black per thousand cubic feet of gas.

It is Ordered, that no natural gas produced from a gas well shall be allowed to escape into the air before or after such gas has been processed for its gasoline content.

It is Ordered, That no gas well or oil well shall be permitted to produce gas from different levels, sands, or strata at the same time through the same string of casing, and that if the Commission believes this to be happening in any case, the Deputy Supervisor is hereby authorized to make gas-oil ratio, bottom-hole pressure, charcoal test of the gas for its gasoline content, specific gravity determination of the gas, analysis of the gas, a study of the well log, and any other tests at any time for the purpose of comparing the gas with gas from offset property, or tests pertinent to the information desired, and the owner of such well is hereby directed to do all things that may be required of him by the Commission's Agent to properly make such test.

It is Further Ordered, That this docket be kept open for the introduction of further evidence or information so that the Commission may, at any time modify or amend this order or enter such other or further general or special,

order or orders as may be necessary to correct or relieve any inequalities, injustices or inequities that may result from the enforcement of the provisions of this order.

Railroad Commission of Texas, Ernest O. Thompson, Chairman. C. V. Terrell, Commissioner. Lon A. Smith, Commissioner. (Seal.)

Attest: C. F. Petit, Secretary.

[fol. 663] NOTE.—On the same date and upon the same Oil and Gas Docket No. 108, the Railroad Commission of Texas entered another order relating to the conservation and prevention of waste of sweet and sour gas in all Districts in Texas except the Panhandle District. This order covered 145 other gas fields in the State of Texas. In this lengthy order was contained certain recitations of fact in particular material to this litigation. This order provided "that in these (other) fields a formula which distributes Fifty (50%) of the market demand in proportion to the ratio of the daily open-flow capacity of each well to the aggregate daily capacity of all the wells producing the same kind of gas in the same reservoir and fifty (50%) per cent of the market demand in proportion to the ratio of the acreage of the tract upon which each well is located to the sum of the acreages upon which the wells are located provided that no acreage shall be considered in excess of the herein described efficient drainage areas which will best accomplish the purposes for which proration was designed; that is, to prevent physical waste and to protect the correlative rights of the owners of gas wells in the field.

"The Commission finds that the open-flow capacity, or relative ability to produce, of the 1215 wells located in fields hereinafter described is 9,115,646,000 cubic feet per day, and is in excess of the reasonable lawful market demand which is 230,223,000 cubic feet daily sweet gas and 5,631,000 cubic feet daily sour gas."

To this order was attached schedules describing the different fields, fixing drainage areas, and prescribing the market demands in terms of MCF. The order provided for the issuance of schedules fixing allocated production for each of the wells in the several fields in accordance with the terms and provisions of said general order.

EXHIBIT 21

Railroad Commission of Texas

Oil and Gas Division

Oil and Gas Docket No. 108

In re. Conservation and Prevention of Waste of Sweet and Sour Gas in the Panhandle District of Texas

Austin, Texas, December 18, 1935.

Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas for the Month of January 1936

The Commission, after due notice as required by the Statute of Texas, held a public hearing on December 16 and 16, 1935, at Austin, Texas, relating to the proration and regulation for the month of January, 1936, of the production of sweet and sour gas in the State of Texas, in accordance with the provisions of House Bill No. 266, passed by the Forty-fourth Legislature of Texas (1935), and thereat the Commission received and heard evidence and gave all parties an opportunity to be heard.

From the evidence introduced at said hearing, together with that which was received by the Commission at previous hearings involving the Panhandle gas field and which was re-introduced and considered as a part of the evidence at the said hearing on December 16 and 17, 1935, the Commission finds and determines as follows:

[fol. 664] First. That the proration order of the Commission dated December 10, 1935, entitled "Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas" should be now and hereafter regarded as the Basic Order relating to the proration of sour and sweet gas in the Panhandle district.

Second. That, except as hereinafter otherwise found, the findings of fact contained and set forth in the said Basic Order are approved and adopted as the findings of fact as a basis for this order for the month of January, 1935,

for that the Commission finds that said findings are supported by the evidence received and considered at the said hearing held December 16th, and 17th, 1935.

Third. That the combined open-flow capacities, that is the aggregate daily capacity to produce, of the gas wells in the East Panhandle Sweet Gas Field is 6,938,160,000 cubic feet per day; the West Panhandle Sweet Gas Field is 8,324,321,000 cubic feet per day; and the Panhandle Sour Gas Field is 2,128,328,000 cubic feet per day.

Fourth. That the reasonable market demand for sweet gas for uses permitted by House Bill No. 266, during the month of January, 1936, in the East Panhandle Sweet Gas Field is 181,174,000 cubic feet per day; and in the West Panhandle Sweet Gas Field is 608,552,000 cubic feet per day; and for sour gas in the Panhandle Sour Gas Field is 520,496,000 cubic feet per day; and said amounts respectively, are the amounts that will be produced from said zones, respectively, during said month to be utilized as permitted by said act.

It is therefore ordered that, except as hereinafter otherwise ordered, all of the provisions, directions, rules, regulations and orders set forth and contained in the said Basic Order relating to the Panhandle Gas Field and the different zones thereof be and the same are hereby adopted and re-promulgated and continued in force and effect for and during the month of January, 1936, and that same shall continue thereafter in force and effect until otherwise ordered by the Commission.

It is further ordered that the daily allowable gas production computed on the basis set forth in House Bill No. 266, in said zones, respectively, for and during the month of January, 1936, and thereafter until ordered by the Commission, shall be as follows:

East Panhandle Sweet Gas Field	181,174,000	cubic feet per day
West Panhandle Sweet Gas Field	608,552,000	cubic feet per day
Panhandle Sour Gas Field	520,496,000	cubic feet per day

and same shall be allocated and prorated among the gas wells in said zones respectively, on the basis directed and

ordered in said Basic Order; and the amount of gas each well is allowed to produce daily, in accordance herewith, shall constitute its daily allowable production, but no well shall in any event be permitted to produce in excess of 25 per cent of its open-flow capacity. Schedules shall be prepared and available to all gas well owners accordingly.

It is further ordered that this Docket be kept open to consider any claims of discrimination or hardship, and to offer administrative relief, if possible, for any hardship which might result by virtue of this Order and that the Commission is anxious to hear at public hearing, in accordance to law, evidence as to any peculiarities as to any or all of the gas fields or reservoirs and/or gas wells affected by this Order.

Railroad Commission of Texas, Ernest O. Thompson, Chairman, C. V. Terrell, Commissioner. (Seal.) Attest: C. F. Petet, Secretary.

[fol. 665]

EXHIBIT 24

Analysis of Gas Withdrawn from East Panhandle Field by Gas Pipe Line Companies and Gasoline Plants

Name of Company	Total Gas Withdrawn to Aug. 1, 1935, M. Cu. Ft.	Total Acreage under production	M. Cu. Ft. Recoveries Per Acre
Texas Panhandle Gas Co	45,214,776	1,200	37,061
Lone Star Gas Co.	50,133,603	14,528	3,451
Northern Texas Utilities Co.	56,761,066	2,379	23,589
Brazos River Gas Co.	847,682	250	3,391
Public Service Corp. of Texas	1,826,327	80	22,829
Wheeler Gas Co.	172,193	100	1,722
Shamrock Gas Co.	1,205,926	480	2,512
Mobeetie Gas Co. (C&H)	254,193	80	3,177
Dozier Gas Co.	51,067	160	319
Totals Pipe Line Companies East Panhandle Field	156,466,833M	19,277	8,116M
Airolene Gasoline Co. (C)	22,085,029	680	32,478
Magnolia Gasoline Co.	17,666,203	720	24,536
Buckeye Gasoline Co.	52,070,630	1,840	28,299
Smith Gasoline Co.	50,503,537	1,960	25,767
American Natural Gasoline Co.	58,303,348	2,230	26,145
Phillips Gasoline Co. (All wells located in East Panhandle field)	84,541,737	9,913	8,528
Shamrock-Clayton Gasoline Co.	17,019,247	2,260	7,530
Coltexo No. 1	63,709,793	7,904	19,755
Coltexo No. 3	43,873,900		
Coltexo No. 4	48,557,317		
Totals Gasoline Plants East Panhandle Field	458,330,741M	27,507	16,662M
Totals of Pine Lines and Gasoline Plants, East Panhandle Field	614,797,574M	46,784	13,141
Casinghead Gas "Not Treated"	64,397,155M		
Gas Blown to Air & Used in Drilling Wells	104,230,490M		
Total Gas Withdrawn from East Panhandle Field	783,425,219M		

EXHIBIT 24—Continued

Analysis of Gas Withdrawn from East Panhandle Field by Gas Pipe Line Companies and Gasoline Plants

[fol. 666] Texas Panhandle Gas Company, Wheeler County, Texas

Company	Well Name & No.	Sec. & Blk.	Present Rock Press.	Acreage Under Lease Actual	Total Recoveries 8/1/35 M	Recoveries per acre Actual Lease
D–T. P. Gas Co.	M. E. Ackley 1–A	20–24	270	80	4,143,191	51,790
D–T. P. Gas Co.	M. E. Ackley 1–B	4–27	269	140	4,201,732	30,012
D–T. P. Gas Co.	M. E. Ackley 3	4–27	272	140	2,590,669	18,504
D–T. P. Gas Co.	M. E. Ackley 4	4–27	270	160	3,150,974	19,694
D–T. P. Gas Co.	M. E. Ackley 5	4–27	269	160	4,702,389	29,390
D–T. P. Gas Co.	A. J. Laycock 1	9–27	268	200	4,640,070	23,200
D–T. P. Gas Co.	A. J. Laycock 2	2–27	268	240	3,367,616	14,032
D–T. P. Gas Co.	A. J. Laycock 3	2–27	268	156.53	4,150,484	26,515
D–T. P. Gas Co.	E. L. Woodley 1	21–24	268	40	1,908,803	47,720
D–T. P. Gas Co.	E. L. Woodley 1–A	21–24	267	40	2,936,427	73,411
D–T. P. Gas Co.	E. L. Woodley BB	21–24	267	40	5,094,501	127,363
D–T. P. Gas Co.	E. L. Woodley C	21–24	270	40	4,327,920	108,198
				1,436.53	45,214,776	31,474
	Lone Star Gas Company					
D–Alma Pet. Cor. Brinley & Cain 1		19–24	271	160	243,666	1,523
D–Alma Pet Cor Brinkely Cain 2		19–24	272	160	150,668	942
D–J. B. Clark Trustee–O. T. Gordon 1		107–23	309	80	318,511	3,981
D–J. B. Clark Trustee J. D. Purcell 1		50–17	329	80	320,564	4,007
D–Frank F. Dubose–Close Heirs 1		82–23	316	40	702,657	17,566
D–A. S. Martin Gosch 1		81–23	318	40	593,540	14,839
D–Martin–Dubose E. M. Gossett 1		101–23	314	120	396,889	3,307
D–Frank F. Dubose–J. W. Grogan 1		57–23	311	160	196,384	1,227
D–Fain–McGaha & Tex. St. Oil Co. MB1		53–23	328	34	207,991	6,117
D–Fain–McGaha & Geo. L. Close 1		54–23	329	160	49,613	310
D–Fain–McGaha & Ivy Close 1		77–23	329	188.2	494,259	2,629
D–Fain–McGaha & Ivy Close 2		82–23	328	188.2	718,008	3,819
D–Fain–McGaha & Ivy Close 3		82–23	316	188.2	542,579	2,886
D–Fain–McGaha & Ivy Close 4		75–23	320	188.2	122,667	652

EXHIBIT 24—Continued

Analysis of Gas Withdrawn from East Panhandle Field by Gas Pipe Line Companies and Gasoline Plants

Texas Panhandle Gas Company, Wheeler County, Texas

Company	Well Name & No.	Sec. & Blk.	Present Rock Press.	Acreage Under Lease Actual	Total Recoveries 8/1/35 M	Recoveries per acre Actual Lease
D–Fain–McGaha & Ivy Close	6	78–23	326	188.2	334,287	1,778
D–Fain–McGaha & Ivy Close	7	78–23	327	188.2	326,938	1,739
D–Fain–McGaha & Ivy Close	8	78–23	327	188.2	140,353	747
D–Fain–McGaha & Ivy Close	9	80–23	319	188.2	122,494	652
D–Fain–McGaha & Ivy Close	10	80–23	321	188.2	222,703	1,185
D–Fain–McGaha & Ivy Close	11	77–23	320	188.2	113,267	602
D–Fain–McGaha & Ivy Close	13–A	82–23	314	188.2	525,701	2,796
D–Fain–McGaha & Ivy Close	14	82–23	314	188.2	485,069	2,580
D–Fain–McGaha & Ivy Close	15	83–23	316	188.2	265,695	1,413
D–Fain–McGaha & Ivy Close	17	83–23	319	188.2	309,327	1,645
D–Fain–McGaha & Ivy Close	18	83–23	316	188.2	312,655	1,663
D–Fain–McGaha & Ivy Close	19	83–23	314	188.2	402,900	2,143
D–Fain–McGaha & Ivy Close	20	77–23	324	188.2	326,083	1,734
D–Fain–McGaha & Oscar Close	1	78–23	324	160	250,922	1,568
D–Fain–McGaha & W. L. Cooper	B–1	80–23	315	40	419,831	10,496
D–Fain–McGaha & W. L. Cooper	2	80–23	318	40	104,627	2,616
D–Fain–McGaha & W. A. Edwards	1	54–23	325	141	440,843	3,127
D–Fain–McGaha & J. W. Grogan	A–1	74–23	325	480	386,408	805
D–Lone Star Gas A. S. Martin	2	52–17	338	80	106,068	1,305
D–Lone Star Gas J. W. Mengers	1	71–17	329	40	116–262	2,907
D–Lone Star Michell–Mertel	1	4–24	292	100	211,645	2,116
D–Lone Star Dora Morgan	1	93–17	272	80	696,350	8,704
D–Lone Star Dora Morgan	2	93–17	264	60	137,571	2,293

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D–Lone Star Gas Co. Hasher		69–17	333	480	123,436	257
D–Lone Star Gas Co. T. J. Jones	1	1–24	273	40	289,151	7,229

D–Lone Star Gas Co. T. C. Jones 2	1–24	270	40	563,053	14,076
D–Lone Star Gas Co. T. C. Jones 3	1–24	271	40	468,897	11,722
D–Lone Star Gas Co. T. C. Jones 4	1–24	271	40	594,921	14,873
D–Lone Star Gas Co. B. F. Kiser 1	33–17	359	160	74,269	464
D–Lone Star Gas Co. John Krizan 1	101–23	314	80	398,273	4,978
D–Lone Star Gas Co. D. B. Lamb 1	91–17	273	20	214,577	10,729
D–Lone Star Gas Co. C. A. Linskey 1	129–23	303	120	461,991	3,850
D–Lone Star Gas Co. C. A. Linskey 2	129–23	287	80	472,279	5,903
D–Lone Star Gas Co. C. A. Linskey 3	106–23	305	160	332,120	2,076
D–Lone Star Gas Co. A. S. Martin 1	52–17	338	80	213,275	2,666
D–Fain–McGaha Tex. SOC J. W. Grogan 1–B	73–23	325	160	261,058	1,632
D–Fain–McGaha Tex. SOC O. B. Harvey 1	56–23	324	160	595,397	3,721
D–Fain–McGaha Tex. SOC Mag. Pet. Co. 1	54–23	329	18	318,012	17,667
D–Fain–McGaha Tex. SOC F. P. Parsons 1	53–23	326	33	369–315	11,191
D–Fain–McGaha Tex. SOC F. P. Parsons 2	53–23	327	33	319,801	9,691
D–Fain–McGaha Tex. SOC F. P. Parsons 3	53–23	327	33	419,121	12,701
D–Fain–McGaha Tex. SOC Ethel Perry 1	78–23	328	160	180,827	1,130
D–Fain–McGaha Tex. SOC J. D. Purcell 1	50–17	331	54	376,182	6,966
D–Fain–McGaha Tex. SOC J. D. Purcell 2	50–17	332	54	336,182	6,226
D–Fain–McGaha Tex. SOC J. D. Purcell 3	50–17	...	54	96,395	1,785
D–Henry Holmes et al Close Heirs 1	82–23	317	20	619,688	30,984
D–Henry Holmes et al Close Heirs 2	82–23	317	20	489–417	24,471
D–JQOI Co. E. L. Arnold J. D. Purcell 1	51–17	333	160	185,335	1,158
D–Kosmo Carbon Co. Chas. Hicks 1	52–17	333	40	396,374	9,908
D–T. S. Gasoline Co. Adams–Prince Burch 1	89–17	281	40	85,103	2,128
D–T. S. Gasoline Co. L. C. Burcham 1	91–17	271	80	768,850	9,611
D–T. S. Gasoline Co. L. C. Burcham 2	91–17	278	80	195,362	2,442
D–T. S. Gasoline Co. Nelson 1	5–24	291	80	102,037	1,275
D–T. S. Gasoline Co. Ed. R. Wallace 1	47–23	368	80	239,744	2,997
D–Mid–Kan Oil & Gas & Marathon Oil Co. Della Anderson 1	56–23	321	40	570,090	14,252
D–Mid–Kan Oil & Gas & Marathon Oil Co. J. F. Coates 1	93–17	268	160	320,561	2,004
D–Mid–Kan Oil & Gas & Marathon Oil Co. J. L. Newton 1	92–17	264	80	441,022	5,213
D–Jas. R. Miller & Geo. W. Cooper C. C. George 1	85–17	335	240	646,605	2,694
D–Mudge Oil Co. of Texas Chas. Hicks 1	52–17	334	40	444,081	11,102
D–Mudge Oil Co. of Texas Chas. Hicks 2	52–17	334	40	441,650	11,041
D–Mudge Oil Co. of Texas Chas. Hicks 3	52–17	333	40	358,869	8,972
D–Mudge Oil Co. of Texas Mertel 1	111–23	319	160	30,244	189

EXHIBIT 24—Continued

Analysis of Gas Withdrawn from East Panhandle Field by Gas Pipe Line Companies and Gasoline Plants

Texas Panhandle Gas Company, Wheeler County, Texas

Company — Well Name & No.	Sec. & Blk.	Present Rock Press.	Acreage Under Lease Actual	Total Recoveries 8/1/35 M	Recoveries per acre Actual Lease
D–N. Amer. Oil & Gas P. C. Ackley 1	20–24	270	160	87,456	547
D–Texoma O. & G. Co. P. C. Ackley 1	20–24	285	80	465,769	5,822
D–Sabine Prod. Co. E. L. Woodley 1	21–24	268	40	631,164	15,779
D–Staley Wynne & Co. Chas. Hicks 1	53–17	356	80	151,200	1,890
D–Sun Oil Co. Godfrey Erc 1	127–23	310	80	985,588	12,320
D–Texoma Nat. Gas Co. G. C. Gordon 1	91–17	273	80	452,089	5,651
D–Texoma Nat. Gas Co. G. C. Gordon 2	91–17	275	80	347,322	4,342
D–Texoma Nat. Gas Co. Chas. Hicks 1	53–17	351	320	134,680	421
D–Texoma Nat. Gas Co. Dora Morgan 1	93–17	270	80	349,157	4,364
D–Texoma Nat. Gas Co. Dora Morgan 2	93–17	262	80	131,322	1,641
D–Texoma Nat. Gas Co. B. P. Sewell 1	1–24	274	80	491,489	6,144
D–Texoma Nat. Gas Co. D. P. Sewell 2	1–24	274	80	221,835	2,773
Total Lone Star Gas			14,528	50,133,603	3,451
[fol. 668]					
D–Lone Star Gas Co. C. L. Nickell 1	64–17	366	80	130,513	1,631
D–Lone Star Gas Co. Parsons 1	53–23	325	38	556,443	14,643
D–Lone Star Gas Co. A. B. Pike 1	50–17	332	40	120,696	3,017
D–Lone Star Gas Co. Pitsch 1	100–23	312	160	134,245	839
D–Lone Star Gas Co. J. D. Purcell 1	51–17	364	160	300,089	1,876
D–Lone Star Gas Co. J. A. Ridinger 1	65–17	364	120	116,294	969
D–Lone Star Gas Co. V. Richey 1	3–24	273	160	414,383	2,590
D–Lone Star Gas Co. F. E. Sheldon 1	22–24	268	120	447,603	3,955
D–Lone Star Gas Co. L. B. Simms 1	103–23	319	80	225,156	2,814
D–Lone Star Gas Co. H. W. Smock 1	5–24	291	40	511,500	12,788
D–Lone Star Gas Co. Ida E. Stauffer 1	102–23	314	160	710,937	4,443
D–Lone Star Gas Co. O. P. Stuckey 1	92–17	261	50	756,107	15,122

D–Lone Star Gas Co. O. P. Stuckey 2	92–17	268	50	190,143	3,803
D–Lone Star Gas Co. Edwards Trostle 1	130–23	285	40	360,519	9,013
D–Lone Star Gas Co. Edwards Trostle 2	130–23	287	40	380,413	9,510
D–Lone Star Gas Co. Edwards Trostle 3	130–23	280	40	231,407	5,785
D–Lone Star Gas Co. Hinerman Trostle 1	90–17	301	80	285,004	3,563
D–Lone Star Gas Co, T. E. Trostle 1	90–17	298	40	188,658	4,716
D–Lone Star Gas Co. John Turnbow 1	67–17	357	40	292,879	7,322
D–Lone Star Gas Co. J. W. Turnbow 1	53–17	352	80	201,012	2,513
D–Lone Star Gas Co. W. H. Vermillion 1	80–17	392	80	191,456	2,393
D–Lone Star Gas Co. W. B. Wofford 1	68–17	349	80	95,562	1,195
D–Assoc. Natl. Gas Cor. G. W. Sitter 2	33–24	...	160	443,459	2,772
D–Post Dated Oil Co. G. W. Sitter 1	33–34	235	120	227,564	1,896
D–Texoma N. Gas Co. & Piney O. & G. Co. J. D. Cuddeback 1	18–24	274	160	125,520	785
D–Wood–Tex O'G Co. C. A. Linkey 1	126–23	295	80	1,129,679	14,121
D–Wood–Tex O'G Co. C. A. Linkey 2	126–23	290	80	798,516	9,981
D–Lone Star Gas Co. M. E. Ackley 1	20–24	268	80	569,207	7,115
D–Lone Star Gas Co. R. L. Adamson 1	50–17	332	40	336,703	8,418
D–Lone Star Gas Co. R. L. Adamson 2	50–17	334	40	374,351	9,359
D–Lone Star Gas Co. Mavet Brown 1	53–23	325	40	492,258	12,306
D–Lone Star Gas Co. Mavet Brown 2	53–23	328	40	372,287	9,307
D–Lone Star Gas Co. Mavet Brown 3	53–23	329	40	198,994	4,975
D–Lone Star Gas Co. Adams & Prince B2	89–17	284	40	112,887	2,822
D–Lone Star Gas Co. L. C. Burcham 4	89–17	286	40	86,491	2,162
D–Lone Star Gas Co. J. Harvey Close 1	78–23	325	80	200,756	2,509
D–Lone Star Gas Co. J. Harvey Close 2	78–23	324	80	100,065	1,251
D–Lone Star Gas Co. Martin & Dubuose Ivy Close	83–23	314	40	313,072	7,827
D–Lone Star Gas Co. Ivy Close 2	83–23	312	40	321,608	8,040
D–Lone Star Gas Co. Ivy Close 3	83–23	312	40	167,155	4,178
D–Lone Star Gas Co. Ivy Close 4	83–23	314	40	227,406	5,685
D–Lone Star Gas Co. J. F. Coats	93–17	268	160	492,930	3,081
D–Lone Star Gas Co. Rean Cody 1	88–17	323	80	111,475	1,393
D–Lone Star Gas Co. W. L. Cooper 1	80–17	318	80	145,661	1,821
D–Lone Star Gas Co. J. D. Cuddeback 1	2–24	273	80	981,073	12,263
D–Lone Star Gas Co. J. W. Curry 1	53–23	251	80	94,395	1,180
D–Lone Star Gas Co. J. W. Curry 2	53–23	329	80	238,987	2,987
D–Lone Star Gas Co. J. W. Curry 3	53–23	329	60	108,508	1,808

EXHIBIT 24—Continued

Analysis of Gas Withdrawn from East Panhandle Field by Gas Pipe Line Companies and Gasoline Plants

Texas Panhandle Gas Company, Wheeler County, Texas

Company	Well Name & No.	Sec. & Blk.	Present Rock Press.	Acreage Under Lease Actual	Total Recoveries 8/1/35 M	Recoveries per acre Actual Lease
D–Lone Star Gas Co.	J. W. Curry 4	53–23	329	60	68,405	1,104
D–Lone Star Gas Co.	A. H. Finley 1	66–17	362	160	227,176	1,420
D–Lone Star Gas Co.	Edwards–Griswold 1	1–24	282	80	310,716	3,884
D–Lone Star Gas Co.	Martin Dub. Gris 1	1–24	273	40	323,249	8,091
D–Lone Star Gas Co.	R. W. Griswold 1	1–24	271	40	492,214	12,305
D–Lone Star Gas Co.	R. W. Griswold 2	1–24	273	40	485,813	12,145
D–Lone Star Gas Co.	J. A. Hall 1	49–17	334	40	161,269	4,032
D–Lone Star Gas Co.	J. A. Hall 2	49–17	335	40	129,382	3,235
D–Lone Star Gas Co.	Mary W. Hatcher 1	80–23	318	20	442,100	22,105
D–Lone Star Gas Co.	Mary W. Hatcher 2	80–23	317	20	667,030	33,852
D–Lone Star Gas Co.	Mary W. Hatcher 3	80–23	317	40	583,289	14,582
D–Lone Star Gas Co.	Wisch Hatcher 1	80–23	315	40	101,384	2,535
D–Lone Star Gas Co.	Wisch Hatcher 2	80–23	318	40	413,840	10,346
[fol. 669]						
D–Nor. Tex. Utilities	Cueddback 1	2–24	281	80	919,492	11,494
D–Nor. Tex. Utilities	Anges (Ember) 1	70–13	422	160	285,737	1,786
D–Nor. Tex. Utilities	Finley 1	66–17	356	160	1,436,879	8,980
D–Nor. Tex. Utilities	George 1	88–17	325	33	4,810,518	145,773
D–Nor. Tex. Utilities	George 2	74–17	343	33	480,305	14,555
D–Nor. Tex. Utilities	George 3	73–17	339	33	469,479	14,227
D–Nor. Tex. Utilities	Gooch 1	81–23	316	70	1,269,550	18,136
D–Nor. Tex. Utilities	Gooch 2	81–23	316	70	1,307,011	18,672
D–Nor. Tex. Utilities	Gooch 3	81–23	317	70	1,183,990	16,914
D–Nor. Tex. Utilities	Gooch 4	81–23	316	70	1,329,938	18,999
D–Nor. Tex. Utilities	Gooch 5	81–23	314	70	1,320,129	18,859
D–Nor. Tex. Utilities	Gooch 6	81–23	313	70	1,557,324	22,247

D–Nor. Tex. Utilities Gooch 7	81–23	317	70	1,235,861	17,655
D–Nor. Tex. Utilities Gooch 8	81–23	317	70	932,892	13,327
D–Nor. Tex. Utilities Griswold 1	1–24	275	40	2,825,300	57,521
D–Nor. Tex. Utilities Hasher 1	69–17	333	160	1,735,978	10,850
D–Nor. Tex. Utilities Lamb 1	91–17	277	20	3,723,805	186,190
D–Nor. Tex. Utilities Martin 1	87–17	309	160	1,995,290	12,471
D–Nor. Tex. Utilities Mengers 1	71–17	329	40	768,786	19,220
D–Nor. Tex. Utilities Morgan 1	93–17	272	20	3,343,066	167,153
D–Nor. Tex. Utilities Newton 1	92–17	270	20	2,719,127	135,956
D–Nor. Tex. Utilities Roba 1	105–23	304	20	1,377,338	68,867
D–Nor. Tex. Utilities Stuckey 1	92–17	274	20	2,554,295	127,715
D–Nor. Tex. Utilities Trostle 1	130–23	295	20	3,372,214	168,611
D–Nor. Tex. Utilities Tyrell 1	128–23	304	160	.....	.....
D–J. B. Black Trustee J. D. Purcell 1A	51–17	329	80	273,241	3,416
D–J. B. Black Trustee M. S. Purcell 1	52–17	334	160	537,585	3,360
D–J. B. Black Trustee M. S. Purcell 1A	52–17	335	160	520,036	3,250
D–Gillespie & Son McMurty 1	67–17	354	80	224,548	2,807
D–Magnolia Pet. Co. Trostle 1	130–23	305	80	343,486	4,294
D–J. O. Whittington Midway 1	9–27	264	80	2,740,482	.....
D–J. O. Whittington Whittington 1	6–27	269	54	8,280,108	.....
D–J. O. Whittington Globe 1	20–A8	88	80	1,411,781	17,647
Total Northern Tex Utilities			2,379	56,761,066	23,859

EXHIBIT 24—Continued

Analysis of Gas Withdrawn from East Panhandle Field by Gas Pipe Line Companies and Gasoline Plants

Brazos River Gas Company

[fol. 670]

Company Name	Farm Name	Location Sec.-Blk.	Pres. rock press	Acreage under Lease	Total Recoveries to 8/1/35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
D Brazos River Gas	Katchelhoffer 1	7-23	190	40	214,321	5,358
D Brazos River Gas	Paul Ladd 1	97-23	335	140	633,361	4,524
Totals and average for Brazos River Gas Co.				180	847,682	4,709
Dozier Gas Company						
D Dozier Gas Co.	Sam Guest 1	28-17	304	160	51,067	319
C. & H. Gas Company (Mobeetie Gas Co.)						
D C. & H. Gas Co.	S. L. Farris	40-24	229	80	254,193	3,177
Public Service Corp. of Texas						
D Public Service	H. C. Tyrell 1	22-24	265	80	1,826,327	22,829
Shamrock Gas Company						
D Hal H. Vaughan	Simmons O'Gorman 2	77-17	329	160	933,738	5,836
D Hal H. Vaughan	Simmons O'Gorman 1	77-17	350	160	272,188	1,701
D Hal H. Vaughan	Bowers 1	45-17	No record	160	No takes	
Totals & Average for Shamrock Gas Company				480	1,205,926	2,512
Wheeler Gas Company						
D H. M. Wiley	Shelton 1	21-A8	55	20	141,683	7,084
D S. M. Tindall	Willingham 1	8-27	273	80	30,510	381
Totals and average for Wheeler Gas Company				100	172,193	1,722

(Here follows 1 paster, side fols. 671 and 672)

[fols. 671 & 672]

Schedule Showing Drainage by Area Producing Gas for Gasoline Stripper Plants and Gas Used in Producing Oil

Company Name		Farm Name	Location	Original Reserve M. Cu. Ft.	Total Gas withdrawn to 8/1/35 Actually measured M. Cu. Ft.	Estimated Gas from Unconnected Oil Wells & Completions M. Cu. Ft.	Total Gas Withdrawn to 8/1/35 M. Cu. Ft.	Estimated Gas Reserve now under lease M. Cu. Ft.	Drainage from other leases	
Air.	J. O. Whittington	Globe Laycock	S½ SW 20–A8	1,447,661	.....	.....	2,693,261	127,631	1,373,231	
Mag.	Magnolia Pet. Co.	Worley	NE & SW NW & W½ NW & NE SW 39–24	3,728,821	8,686,175	19,457	8,705,632	1,579,022	6,555,833	
Mag.	Magnolia Pet. Co.	Johnson	NW 40–24	1,864,410	6,092,744	203,385	6,296,129	612,842	5,044,561	
Buck	Texas Company	Smith	NE 40–24	2,386,445	4,452,191	74,158	4,526,349	754,617	2,894,521	240 Ac. Pr.
Buck	Gibson	Bentley	SE & NW 42–24	2,013,563	11,336,007	665,224	12,001,231	455,690	10,443,358	/
Buck	Mid-Kansas	Phillips	SW 41–24	1,342,375	4,049,292	362,422	4,411,714	232,039	3,301,378	
Buck	Piney	Bentley	E½ SW 42–24	671,187	11,395,163	67,183	11,462,346	184,512	10,975,670	
Buck	Texas	Bentley	W½ SW 42–24	988,137	1,794,161	148,684	1,942,845	295,309	1,250,017	
Buck	Humble	Koons	E½ NW & W½ NE 43–24	671,188	472,932	39,649	512,581	168,671	10,064	80 Ac. Pr.
Buck	Magic O&G	Koons	N½ SE 43–24	783,052	4,131,190	46,624	4,177,814	215,265	3,610,027	
Buck	Piney	Koons	E½ NE & W½ NW 43–24	671,188	1,023,951	49,928	1,073,879	168,671	571,362	80 Ac. Pr.
Buck	Bell O&G	Walker	N½ NW & SE NW 44–24	235,594	7,135	2,911	10,046	84,335	.....	241,213M 40 Ac. Pr.
Buck	Magic O&G	Walker	SE 44–24	2,200,004	2,385,722	23,716	2,409,438	831,588	1,041,022	
Buck	Piney O&G	Walker	N½ NE & SW NE 44–24	335,594	281,704	62,411	344,115	84,335	92,856	40 Ac. Pr.
Buck	J. Gordon Burch	Plummer	N½ SE 45–24	969,493	1,018,125	13,216	1,031,341	316,322	378,170	
Buck	Piney	Plummer	E½ NE 45–24	764,408	593,949	16,447	610,396	192,097	38,085	
Air.	Lela O&G	Laycock	NE & S½ NW 9–27 & N½ NW 20–A8	2,833,906	12,051,817	19,861	12,071,678	354,115	9,591,887	320 Ac. Pr.
Mag.	Magnolia Pet. Co.	A. J. Laycock	N½ NW 9–27	708,476	1,383,233	100	1,383,333	266,570	941,427	
Air.	Magnolia Pet. Co.	Lula Laycock 1	NW SE & NE SW 9–27	1,737,193	2,517,156	.....	2,517,156	436,559	1,216,522	
Mag.	Magnolia Pet. Co.	Lula Laycock 2	S½ SW & N½ NW 10–27	3,474,386	1,504,050	.....	1,504,050	1,944,015	.....	26,321
Air.	World Oil Co.	Jackson	S½ SE 11–27	671,188	4,120,831	74,526	4,195,357	168,671	3,692,840	
Buck	Continental	Jackson	N½ SE 11–27	671,188	25,574	123,719	149,293	168,670	.....	353,225
Buck	Continental	Compary	N½ SW 12–27	671,188	1,830,707	230,185	2,060,892	168,670	1,558,374	
Buck	North Fork	Jackson	N½ NW & N½ NE & SW NE 11–27	1,677,969	4,412,226	126,657	4,538,883	381,489	3,242,403	
									67,823,608	620,759
			Net Drainage from Other Leases						67,202,849M	

[fol. 673]

Summary of Gas Wells Connections Other Than Natural Gas Pipe Line Connections as of August 1, 1935, Eastern Panhandle Field

Gas Wells connected to American Gasoline Plant	16
Gas Wells connected to Coltexo Gasoline Plants	32
Gas Wells connected to Airolene Gasoline Plant	4
Gas Wells connected to Danciger Gasoline Plant	2
Gas Wells connected to Magnolia Gasoline Plant	2
Gas Wells connected to Smith Bros. Gasoline Plant	11
Gas Wells connected to Phillips Gasoline Plants	31
Gas Wells connected to Shamrock Gasoline Plant	7
Gas Wells that have no connection	34
Total	139

Status of Wells Heretofore Classified as No Connection on October Railroad Commission Proration Schedule

Total wells heretofore reported as no connection	34
Of this number which were reported as fuel wells	18
Of this number which were reported as N. P. wells	7

EXHIBIT 24—Continued

[fol. 674]

Gas Wells Not Connected to Natural Gas Pipe Lines—8-1-35
East Panhandle Field

Wheeler County

Company	Lease & Well No.	Location	Potential	Rock Pressure	Connection prior to 8/1/35
American	Carlton 1	20-13-H&GN	1,554 M	285	None
Anderson	Cuddeback 1	18-24-H&GN	25,453 M	274	None
Anderson	Reneau 1	98-23-H&GN	12,890 M	319	None
Associated	Sitter 1	33-24-H&GN	29,306 M	235	Sm
Bovaird	Linkey 1	126-23-H&GN	N. P.	N. P.	None
Burch, J. Gordon	Johnson 1	36-24-H&GN	11,960 M	232	Ph
Continental	Jackson 1	11-27-H&GN	8,[illegible]72 M	163	None
Cub Oil Co	Farren 1	26-24-H&GN	26,058 M	235	Ph
Dubose	Close 2	82-23-H&GN	73,092 M	320	Am
Dubose	Farren 1	34-24-H&GN	35,845 M	230	SM
Dumar	Atkins 1	49-23-H&GN	45,340 M	332	Am
Dumar	Bell 1	73-23-H&GN	24,062 M	328	Am
Dumar	Cates 1	72-23-H&GN	14,677 M	328	Am
Dumar	Ftak 1	99-23-H&GN	10,571 M	315	Am
Dumar	Gordon 1	107-23-H&GN	28,836 M	315	Am
Dumar	Grogan 1	57-23-H&GN	5,204 M	315	Am
Dumar	Haines 1	101-23-H&GN	31,532 M	317	Am
Dumar	Harvey 1	56-23-H&GN	70,495 M	326	Am
Dumar	Krizan 1	101-23-H&GN	11,555 M	318	Am
Dumar	Pakan 1	109-23-H&GN	12,378 M	330	Am
Dumar	Pitsch 1	100-23-H&GN	46,221 M	317	Am
Dumar	Pitsch 2	100-23-H&GN	38,937 M	317	Am
Dyck & Delancy	Sitter 1	33-24-H&GN	77,396 M	238	Sm
Dyck & Delancy	Sitter 2	28-24-H&GN	21,552 M	235	Sm
Dyck & Delancy	Wingo 1	124-23-H&GN	40,568 M	295	Sm
Helena	Belew 1	50-24-H&GN	15,660 M	250	None
Magnolia CE	Johnson 4	40-24-H&GN	1,720 M	144	M
Magnolia	Lula Laycock 1	9-27-H&GN	964 M	153	Air
Magnolia	Lula Laycock 2	10-27-H&GN	44,198 M	...	M

Magnolia	Reeves 1	79–17–H&GN	288 M	398	None
Martin Hamilton	Plummer 1	45–24–H&GN	8,358 M	185	Ph
Mert	Sitter 1A	33–24–H&GN	9,895 M	238	Sm
Mert	Sitter 1B	28–24–H&GN	63,431 M	250	Sm
Mudge Oil Co	Flowers 1	26–24–H&GN	42,100 M	295	Ph
Mudge Oil Co	Finley 1	66–17–H&GN	31,872 M	262	Ph
Palmer	Bullard 1	92–17–H&GN	N. P.	N. P.	Air
Phillips	Evans 1	51–24–H&GN	2,625 M	114	Ph
Piney	Boatman Bank	24–24–H&GN	6,328 M	266	Col
Piney	Cuddeback	18–24–H&GN	20,046 M	274	Col
Piney	Mineral Investment	7–24–H&GN	70,176 M	292	Col
Piney	Rippey	123–23–H&GN	2,814 M	312	Col
Piney	Williams 1	6–24–H&GN	55,835 M	287	Col
Post Dated	Sitter 1	33–24–H&GN	20,140 M	250	Sm
Purcell	Fee 1	50–17–H&GN	N. P.	N. P.	None
Rodgers & Horner	Clark 1	6–24–H&GN	47,004 M	377	Sm
Rook, L. W.	Nelson 1	5–24–H&GN	N. P.	N. P.	None
Scott-Allen	Jackson 1	11–27–H&GN	N. P.	N. P.	None
Scott & Warner	Jackson 1	11–27–H&GN	N. PP.	N. P.	None
Shinnery	Binkley 1	35–24–H&GN	10,811 M	264	Ph
Skelly	Johnson D. E. 1	47–24–H&GN	N. P.	N. P.	None
Smith Bros	Massey 1	14–24–H&GN	40,005 M	220	Sm
Smith Bros	Massey 2	14–24–H&GN	46,512 M	290	Sm
Sunray	Linkey 1	126–23–H&GN	19,992 M	281	Am
Texas	Carwile 1	51–24–H&GN	Dead	Dead	None
Underwood	Roach 1	27–24–H&GN	39,674 M	240	Ph
Vaughan	Simms 1	60–17–H&GN	565 M	258	None
Vaughan-Pendleton	Woodley 1	21–24–H&GN	N. P.	N. P.	None
Whittington	Laycock 1	5–27–H&GN	28,793 M	262	None
Whittington	Laycock 2	5–27–H&GN	23,473 M	270	None
Whittington	Laycock 3	5–27–H&GN	190 M	262	None

[fol. 675]

EXHIBIT 24—Continued

Gas Wells Not Connected to Natural Gas Pipe Lines—8-1-35

East Panhandle Field

Wheeler County

Company	Lease & Well No.	Location	Potential	Rock Pressure	Connection prior to 8/1/35
Whittington	Laycock "Globe"	20-A8-H&GN	1,460 M	84	Air
Whittington	Laycock 1	6-27-H&GN	3,665 M	88	Air
Wood-Tex	Linkey 1	126-33-H&GN	32,741 M	295	Am
Wood-Tex	Linkey 2	126-23-H&GN	39,407 M	290	Am

Am American
Air Airolene
Col Coltexo
Ph Phillips
Sm Smith Bros
M Magnolia

Summary of Gas Well Connections in Wheeler County

Connected to Coltexo	5
Connected to American	16
Connected to Smith Bros.	11
Connected to Airolene	4
Connected to Magnolia	2
Connected to Phillips	8
No connection	18
Total	64

EXHIBIT 24—Continued

[fol. 676]

Gas Wells Not Connected to Natural Gas Pipe Lines—8-1-35
East Panhandle Field

Eastern Gray County

Company	Lease & Well No.	Location	Potential	Rock Pressure	Connection prior to 8/1/35
Ama-Gray	Chapman 2	9-25-H&GN	Dead	Dead	Col
Back et al	Fee 1	45-25-H&GN	3,242 M	190	S
Back Estate	Fee 2	45-25-H&GN	3,979 M	165	S
Back	Magnolia Back	45-25-H&GN	3,270 M	175	S
Bell O&G	Morse Tr 2 1	1-26-H&GN	1,490 M	211	None
Biggs et al	Morse	3-26-H&GN	1,025 M	190	None
Childress	Massey 1	41-25-H&GN	7,938 M	175	Ph
Chism	Carpenter 1	27-25-H&GN	2,157 M	219	S
Danciger	Chapman 1	7-26-H&GN	2,973 M	255	None
Danciger	McLarty Lester L	10-1-ACH&B	7,107 M	138	D
Danciger	Morse 3	2-26-H&GN	2,105 M	258	None
Danciger	Saunders 1	3-1-H&GN	1,564 M	153	None
Danciger	Thut 1	3-1-H&GN	6,861 M	155	D
Danciger	Townsite 1	Lefors TS	Dead		
Empire	Cubine 1	36-25-H&GN	N. P.	N. P.	Ph
Empire	Webb 1B	42-25-H&GN	N. P.	N. P.	Ph
Empire	Webb 1	59-25-H&GN	N. P.	N. P.	Ph
Granite	Chapman 1	7-26-H&GN	N. P.	N. P.	None
Hendrix	Evans 1	60-25-H&GN	3,893 M	180	Ph
Irish American	Morse 1	54-25-H&GN	800 M	234	Ph
Johnson	Thut	Sweig	5,240 M	171	Col
Lefors Pet	Davis Shaw 3	7-1-Townsite	4,610 M	140	Col
Lefors Pet	J. M. Shaw 1	Lefors T S	2,929 M	140	Col
Lefors Pet	J. M. Shaw 2	Travis Leech	2,403 M	140	Col
Lefors Pet	J. M. Shaw 3	Travis Leech	5,900 M	138	Col
Lefors Pet	J. M. Shaw 4	Travis Leech	5,404 M	130	Col
Lefors Pet	J. M. Shaw 8	Travis Leech	1,522 M	140	Col
Magnolia	Cubine 2	36-25-H&GN	8,649 M	137	Ph
Magnolia	Gethings 1	14-A9-H&GN	644 M	332	Ph

EXHIBIT 24—Continued

Gas Wells Not Connected to Natural Gas Pipe Lines—8-1-35

East Panhandle Field

Eastern Gray County—Continued

Company	Lease & Well No.	Location	Potential	Rock Pressure	Connection prior to 8/1/35
Magnolia	Webb 1	42-25-H&GN	4,492 M	218	Ph
Magnolia	Morse 1	3-26-H&GN	1,673 M	205	None
Marathon	Carpenter 1	37-25-H&GN	16,666 M	195	S
McLean	Back 1	24-25-H&GN	701 M	196	Ph
Nelson	Dial 1	49-25-H&GN	5,443 M	320	Ph
Parton	Morse A-1	5-26-H&GN	2,112 M	245	Ph
Parton	Morse 3-C	5-26-H&GN	2,442 M	202	Ph
Parton	Morse 4-D	5-26-H&GN	2,814 M	239	Ph
Panhandle	Saunders 1	3-1-ACH&B	N. P.	N. P.	None
Perkins-Cullum	Saunders 1	4-1-BS&F	5,534 M	138	None
Phillips	Blasdel	56-25-H&GN	2,621 M	310	Ph
Saulsbury	Cubine 1	36-25-H&GN	25,064 M	135	Ph
Saulsbury	Grayson 1	36-25-H&GN	6,967 M	205	Ph
Saulsbury	Grayson 2	36-25-H&GN	111 M	205	Ph
Shamrock	Lincoln 4	3-1-ACH&B	5,918 M	157	None
Shamrock	Back 1	44-25-H&GN	2,923 M	170	S
Shamrock	Carpenter 1	37-25-H&GN	19,806 M	144	S
Shamrock	Dunaway 1	3-B&V	4,649 M	140	Col
Shamrock	McCutcheon 1	1-Eustis	5,451 M	142	Col
Shamrock	Lincoln Saunders 1	3-1-ACH&B	868 M	147	Col
Sin-Prairie	Thut 1	Thut	1,047 M	131	Col
Skelly	Thut 1	1-1-H&GN	4,829 M	146	Col
Skelly	Bailey 1	42-25-H&GN	12,147 M	160	None
Skelly	Saunders 1	4-1-ACH&B	6,226 M	155	None
Skelly	Saunders 3	4-1-ACH&B	1,066 M	150	None
Smith	Morse 1	6-26-H&GN	N. P.	N. P.	None
Texon	Chapman 1A	7-26-H&GN	6,682 M	252	Ph
Texon	Sullivan 1	1-1-ACH&B	1,369 M	92	Col
Texon	Sullivan 2	1-1-ACH&B	3,770 M	195	Col

Texas	Williams 3	6-1-ACH&B	2,508 M	188	None
Texoma	McLarty B1-T	2-B2-B&B	Dead	Dead	Col
Texoma	McLarty B3-T	10-1-ACH&B	3,643 M	217	Col
Texoma	Saunders 2-T	3-1-H&GN	1,105 M	192	Col
Texoma	Saunders 6-T	4-1-ACH&B	5,035 M	157	Col
Texoma	Saunders 10-T	Eustis	3,326 M	127	Col
Texoma	Saunders 12-T	Eustis	2,784 M	167	Col
Texoma	Saunders 13-T	Eustis	2,616 M	170	Col

[fol. 677]

Texoma	Saunders 15-T	4-1-ACH&B	367 M	152	Col
Texoma	Saunders 17-T	3-1-ACH&B	Dead	162	Col
Texoma	Saunders 18-T	3-1-ACH&B	2,719 M	160	Col
Texoma	Shaw 1-T	5-1-ACH&B	507 M	107	Col
Texoma	Thut 1-T	1-H&GN	2,942 M	176	Col
Travis	Webb 1	43-25-H&GN	492 M	188	Ph
Travis L R	Morse 1	3-26-H&GN	3,666 M	185	None
Wetzel	Morse 1	67-25-H&GN	2,460 M	305	Ph
Vulcan	Kinard 1	41-25-H&GN	10,005 M	170	Ph
Vulcan	Massey 1	41-25-H&GN	6,425 M	174	Ph

Col Coltexo
D Danciger
Ph Phillips
S Shamrock Clayton

Summary of connections in Eastern Gray County

Connected to Coltexo	27
Connected to Shamrock	7
Connected to Phillips	23
Connected to Danciger	2
Have no Connection	16
Total	75

EXHIBIT 24—Continued

[fol. 678] American Natural Gasoline Co.

Company Name	Farm Name	Location Sec.	Blk.	Present rock pressure	Acreage under lease	Total Recoveries to 8–1–35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
D Dumar Oil & Gas	Pakan 1	109	23	330	80	1,284,305	16,054
D Dumar Oil & Gas	Cates 1	73	23	328	80	1,996,295	24,954
D Dumar Oil & Gas	J. Pitsch 1	100	23	317	160	5,177,310	32,358
D Dumar Oil & Gas	J. Pitsch 2	100	23	317	160	3,983,416	24,896
D Dumar Oil & Gas	Ftak 1	99	23	315	160	1,551,291	9,696
D Dumar Oil & Gas	Hanes 1	101	23	317	160	4,473,081	27,957
D Dumar Oil & Gas	Krizan 1	101	23	318	80	1,340,342	16,754
D Dumar Oil & Gas	E. F. Bell 1	73	23	328	120	3,288,176	27,401
D Dumar Oil & Gas	J. W. Grogan 1	57	23	315	70	647,316	9,247
D Dumar Oil & Gas	Harvey 1	56	23	326	160	6,060,636	37,879
D Dumar Oil & Gas	Gordon 1	107	23	315	160	2,396,958	14,981
D Martin & Dubose	Close 2	82	23	320	40	7,113,296	177,832
D Sunray	Linkey 1	126	23	281	160	2,407,242	15,045
D Wood-Tex	Linkey 1	126	23	295	80	2,255,804	28,198
D Wood-Tex	Linkey 2	126	23	290	80	3,348,878	41,861
D Johnson & Harvey	Harvey 1	56	23	...	160	7,334,525	45,841
D Johnson & Dumar	Grogan 1A	57	23	322	160	2,711,863	16,949
D Dumar	Atkins	49	23	332	160	932,614	2,914
Totals and Average for American Natural Gasoline Company					2,230	58,303,348	26.145

C Texas Company	Noah Smith 1	40–24	.....	160	4,452,191	27,826
C Marathon	Phillips 1, 2, 3	41–24	.....	160	4,049,292	25,308
C Gibson	Bentley 3&6	42–24				
C Gibson	Bentley 7&9	42–24				
C Gibson	Bentley 4	42–24		240		
C Gibson	Bentley 10	42–24	.....	Proven	11,336,007	47,233
C Gibson	Bentley 1	42–24				
C Gibson	Bentley 5	42–24				
C Gibson	Bentley 2	42–24				
C Piney	Bentley 1	42–24				
C Piney	Bentley 3	42–24	.....	80	11,395,163	142,439
C Piney	Bentley 2	42–24				
C Piney	Bentley 4	42–24				
C Piney	Koons B1 & B2	43–24	Proven	40	711,239	17,780
C Piney	Koons 1&2	43–24	Proven	40	312,712	7,818
C Piney	Walker 2	44–24	Proven	40	281,704	7,043
C Piney	Walker 3	44–24				
C Piney	Plummer 1&2	45–24	.....	80	593,949	7.424
C Magic	Koons 1&2	43–24	.....	80	4,131,190	51,641
C Magic	Koons 4	43–24				
C Magic	Walker 1	44–24				
C Magic	Walker 2	44–24	.....	160	2,385,722	14,911
C Humble	Koons 1&2	43–24				
C Humble	Koons 3	43–24	Proven	80	472,932	5,912
C J. Gordon Burch	Plummer 1	45–24				
C J. Gordon Burch	Plummer 2	45–24	.....	80	1,018,025	12,726
C Bell Oil & Gas	Walker 1	44–24	Proven	40	7,135	178
C Texas Company	Bentley 1	42–24	.....	80	1,794,561	22,432

EXHIBIT 24—Continued

Buckeye Natural Gasoline Plant—Continued

Company Name	Farm Name	Location Sec. Blk.	Present rock pressure	Acreage under lease	Total Recoveries to 8–1–35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
C Continental	W. C. Company 1&2	12-27	.....	80	1,830,707	22,884
C Continental	Jackson 1&3	11–27	.....	80	25,574	321
C North Fork	Jackson 1&2	11–27	.....	200	4,412,226	22,061
C Gibson	Phillips 3	41–24)				
C Gibson	Phillips 4	41–24)				
C Gibson	Phillips 5	41–24)				
C Gibson	Phillips 6	41–24)	.....	120	2,860,301	23,835
C Gibson	Phillips 3, 4, 5, 6	41–24)				
C Gibson	Phillips 3 & 4	41–24)				
C Gibson	Phillips 5 & 6	41–24)				
Totals & Average for Buckeye Natural Gasoline Plant				1,840	52,070,630	28,299

[fol. 680]

Airolene Gasoline Plant

C Lela O&G Co	Laycock 6&3	9–27	.....)			
C Lela O&G	Laycock 7	20–A8	.....)	320	12,051,817	37,662
D Magnolia	Lula Laycock 1	9–27	153	80	2,517,156	31,464
D C. T. Palmer	Bullard 1B	92–17	N. P.	40	2,113,744	52,844
D J. O. Whittington	Globe Laycock 1	20–A8	88	80	1,281,480	16,019
C R. A. Burnett	Jackson 1B	11–27	.....	80	1,880,356	23,504
C Lela Oil & Gas	Laycock 3	9–27	.....	See Laycock 6		
C World Oil Co	Jackson 1&2	11–27	.....	80	2,240,475	28,005
Totals & Average for Airolene Gaso Plant				680	22,085,029	32,478

Magnolia "Magic City" Gasoline Plant

D Magnolia Pet	Lula Laycock 2	10-27	N. P.	160	1,504,050	9,400
C Magnolia Pet	E. A. Worley 1	39-24	)			
C Magnolia Pet	E. A. Worley 2	39-24	)	320	8,686,175	27,144
C Magnolia Pet	C. E. Johnson 1	40-24	)			
C Magnolia Pet	C. E. Johnson 2	40-24	)	160	6,092,744	38,080
C Magnolia Pet	C. E. Johnson 3	40-24	)			
D Magnolia Pet	C. E. Johnson 4	40-24	144)			
D Magnolia Pet	A. J. Laycock 1	9-27	N. P.	80	1,383,233	17,290
Totals & Average for Magnolia "Magic City" Plant				720	17,666,203	24,536

[fol. 681]

Smith Brothers Gasoline Plant

D Associated Nat	G. W. Sitter 1	33-24	235	80	4,250,024	53,125
C Cub Oil Co	Johnson 1	34-24		40	417,848	10,446
C Champlin Ref	Eades 1	49-24	)			
C Champlin Ref	Eades 2	49-24	)			
C Champlin Ref	Eades 3	49-24	)	64	75,026	1,172
C Champlin Ref	Eades 4	49-24	)			
C Champlin Ref	Eades 6	49-24		16	19,587	1,224
D Dubose "Frank"	W. Farren 1	34-24	230	80	6,907,206	86,340
D Dyck & Delancy	G. W. Sitter 1	33-24	238	80	12,573,897	157,173
D Dyck & Delancy	Wingo 1	124-23	295	40	5,223,407	130,585
D Mart Oil Co	Sitter 1	33-24	238	160	1,820,388	11,377
D Mert Oil Co	Sitter 2	28-24		80	7,156,516	89,456
D Post Dated Oil	Sitter 1	33-24	250	120	1,328,209	11,068
D Roger & Horner	J. O. Clark 1	6-24	377	120	5,784,229	48,202
D Dyck & Delancy	Sitter B-1	28-24	238	160	1,340,726	8,380
D Dyck & Delancy	Sitter 2	33-24	235	160	269,811	1,686
D Smith Bros	Massey 1	14-24	280	120	1,267,573	10,563
D Smith Bros	Massey 2	14-24	290	120	1,113,366	9,278

EXHIBIT 24—Continued

Smith Brothers Gasoline Plant—Continued

Company Name	Farm Name	Location Sec. Blk.	Present rock pressure	Acreage under lease	Total Recoveries to 8–1–35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
C Smith Bros & Hanlon Buchanan	Harlon 1	49–24	)			
C Smith Bros & Hanlon Buchanan	Harlon 2	49–24	)			
C Smith Bros & Hanlon Buchanan	Hanlon 3	49–24	)			
C Smith Bros & Hanlon Buchanan	Harlon 4	49–24	)			
C Smith Bros & Hanlon Buchanan	Harlon 5	49–24	)			
C Smith Bros & Hanlon Buchanan	Harlon 6	49–24	)	160	67,308	421
C Smith Bros & Hanlon Buchanan	Harlon 7	49–24	)			
C Smith Bros & Hanlon Buchanan	Harlon 8	49–24	)			
C Smith Bros & Hanlon Buchanan	Johnson 1	49–24	)			
C Smith Bros & Hanlon Buchanan	Sitter 1B	34–24	.....	120	134,243	1,119
C Smith Bros & Hanlon Buchanan	Williams 1	33–24	.....	160	591,094	3,694
		49–24	.....	80	163,078	2,038
Total & Average for Smith Bros Gasoline Plant				1,960	50,503,537	25,770

[fol. 682]

Coltexo No. 1 Gasoline Plant

C Danciger	Williams 1	7 ACH&B	.....	.....	202,067 (See Coltexo 3 for well average)	
C Gulf	Saunders 1	3 ACH&B	)			
C Gulf	Saunders 2	3 ACH&B	)			
C Herrogan	Lester 1	1 ACH&B	)	160	3,594,038	22,463
					388,210 (See Coltexo 4 for well average)	
C Mordyan	Davis 1	3 ACH&B	)			
C Mordyan	Davis 2	8 ACH&B	)			
C Mordyan	Davis 3	8 ACH&B	)	80	1,962,324	24,529
C Panhandle	Saunders 2	3 ACH&B	)			
C Panhandle	Saunders 3	3 ACH&B	)			
C Panhandle	Saunders 4	3 ACH&B	)			
C Panhandle	Saunders 5	3 ACH&B	)	80	7,586,404	94,830

D Shamrock Lincoln	Saunders 1	3 ACH&B	147			
C Shamrock Lincoln	Saunders 5	3 ACH&B		80	4,485,567	56,070
C Shamrock Lincoln	Saunders 2	3 ACH&B				
D Shamrock	McCutcheon 1	1 Eustic	142			
C Shamrock	McCutcheon 2	1 Eustis		80	4,731,342	59,142
C Shamrock Plains	Saunders 1	4 ACH&B				
C Shamrock Plains	Saunders 2	4 ACH&B		80	5,481,589	68,520
C Shamrock Plains	Saunders 4	4 ACH&B				
C Shell	Lester 1	1 ACH&B		20	356,538	17,827
C Skelly	Saunders 2	4 ACH&B			44,591 (See Coltexo #3 for well average)	
C Skelly	Saunders 5	4 ACH&B		80	1,888,738	23,609
C Skelly	Saunders 6	4 ACH&B				
C Stanolind	Saunders 1	1 J. C. Eustis				
C Stanolind	Saunders 2	1 J. C. Eustis		80	1,906,993	23,837
C Stanolind	Saunders 3	1 J. C. Eustis				
C Texas Co	Davis 1	8 ACH&B				
C Texas Co	Davis 6	8 ACH&B				
C Texas Co	Davis 2	8 ACH&B		480	7,724,196	16,092
C Texas Co	Davis 4	8 ACH&B				
C Texas Co	Davis 7	9 ACH&B				
C Texas Co	Davis 8	8 ACH&B				
C Texas Co	McLarty A1	1 ACH&B				
C Texas Co	McLarty A3	1 ACH&B				
C Texas Co	McLarty A4	1 ACH&B		400	7,111,272	17,778
C Texas Co	McLarty A5	2 ACH&B				
C Texas Co	McLarty A6	2 ACH&B				
C Texas Co	McLarty A7	2 ACH&B				
C Texas Co	Saunders 4	J. C. Eustis		300	3,485,658	11,619
C Texas Co	Saunders 22	4 ACH&B		240	3,226,128	13,442
C Texas Co	Thut 2	1 H&GN				
C Texas Co	Thut 3	1 H&GN		160	2,279,249	14,245
C Texas Co	Williams 1	7 ACH&B				

EXHIBIT 24—Continued

Coltexo No. 1 Gasoline Plant—Continued

Company Name	Farm Name	Location Sec. Blk.	Present rock pressure	Acreage under lease	Total Recoveries to 8–1–35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
C Texas Co	Williams 11	7 ACH&B	.....)			
C Texas Co	Williams 14	7 ACH&B	.....)			
C Texas Co	Williams 5	7 ACH&B	.....)			
C Texas Co	Williams 7	7 ACH&B	.....)	.....	4,344,510 (See Coltexo 3 for well average)	
C Texas Co	Williams 9	7 ACH&B	.....)			
C Texas Co	Williams 10	7 ACH&B	.....)			
C Texas Co	Williams 8	7 ACH&B	.....)			
C Texas Co	Williams 12	7 ACH&B	.....)			
C Texas Co	Williams 13	7 ACH&B	.....)			
[fol. 683]						
D Texoma-Coltexo	Saunders 2T	3 H&GN 1	192	80	133,153	1,664
D Texoma-Coltexo	Saunders 6T	4 ACH&B	157	40	793,309	19,83
D Texoma-Coltexo	Saunders 10T	1 Eustis	127	74	396,129	5,353
D Texoma-Coltexo	Saunders 12T	1 Eustis	167	75	416,944	5,559
D Texoma-Coltexo	Saunders 13T	1 Eustis	170	75	286,658	3,822
D Texoma-Coltexo	Saunders 15T	4 ACH&B	152	40	151,059	3,776
D Texoma-Coltexo	Saunders 17T	3 ACH&B	162	80	293,651	3,671
D Texoma-Coltexo	Saunders 18T	3 ACH&B	160	80	439,476	5,493
Totals & Average for Coltexo No. 1 Gasoline Plant				.....	63,709,793	.....
Gas Transfer to Coltexo 3				.....	4,591,168 for Well averages	

[fol. 684]

Coltexo No. 3 Plant

C Danciger Oil	Shaw 1	5 ACH&B		80	1,459,129	18,239
C Danciger Oil	Shaw 2	5 ACH&B		40) Dan	811,522)	
C Danciger et al	Townsite 1	T Leach S dead		)Co3	469,286)	32,020
				)Dan	594,615)	
C Danciger et al	Williams 1	7 ACH&B		80	2,085,652)	36,029
C Danciger et al	Williams 2	7 ACH&B		)Co. 1	202,067)	
C Danciger et al	Williams 3	7 ACH&B		160	711,333	4,446
D Johnson	Thut 1	A Sweig	171			
D Lefors	J. M. Shaw 1	Lefors TS	140			
C Lefors	Davis Shaw 1	T Leach				
D Lefors	J. M. Shaw 2	T Leach	140			
D Lefors	Davis Shaw 3	T Leach	140			
D Lefors	J. M. Shaw 3	T Leach	138	120	14,784,529	123,204
D Lefors	J. M. Shaw 4	T Leach	130			
D Lefors	J. M. Shaw 2	T Leach	140			
D Lefors	J. N. Shaw 8	T Leach	140			
D Lefors	J. M. Shaw 8	T Leach	140			
D Lefors	J. M. Shaw 1, 2, 8, 4	T Leach				
C Plains Pet	Thut 1	H Thut		80	1,791,515	22,394
C Republic Pro	Saunders 1	4 ACH&B		80	2,028,703	25,359
D Sin-Prairie	Thut 1	H Thut	131	160	2,570,051	16,063
C Sin-Prairie	Thut 2	Thur Sr		80	922,360	11,530
C Skelly Oil	Saunders 2	4 ACH&B				
C Skelly Oil	Saunders 5	4 ACH&B			Col 44,591)	
D Skelly Oil	Saunders 1	4 ACH&B	155	160) Co. 3		
C Skelly Oil	Saunders 7	4 ACH&B			1,290,227)	8,343
D Skelly Oil	Thut 1	1-1 H&GN	146	160	2,314,562	14,466
C Stekoll-Rieger	JC Short 1	JC Short		160	3,499,410	21,871
C Texas Co	Shaw 2	5 ACH&B				
C Texas Co	Shaw 3	5 ACH&B		160	2,754,272	17,214
C Texas Co	Shaw 4	5 ACH&B				
C Texas Co	Shaw 5	5 ACH&B				
C Texas Co	Williams 1	7 ACH&B				

EXHIBIT 24—Continued

Coltexo No. 3 Gasoline Plant—Continued

Company Name	Farm Name	Location Sec. Blk.	Present rock pressure	Acreage under lease	Total recoveries to 8/1/35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
C Texas Co	Williams 11	7 ACH&B	.....	)		
C Texas Co	Williams 14	7 ACH&B	.....	)		
C Texas Co	Williams 2	6 ACH&B	.....	)		
C Texas Co	Williams 5	7 ACH&B		)3		
C Texas Co	Williams 7	7 ACH&B	.....	560)Co.	6,255,147)	
C Trxas Co	Williams 4	6 ACH&B	.....	Co. 1	4,344,510)	18,928
C Texas Co	Williams 6	6 ACH&B	.....	)		
C Texas Co	Williams 9	7 ACH&B	.....	)		
C Texas Co	Williams 10	7 ACH&B	.....	)		
C Texas Co	Williams 15	6 ACH&B	.....	)		
D Texoma Coltexo	Shaw 1-T	5 ACH&B	107	160	232,372	1,452
D Texoma Coltexo	Thut 1-T	1 H&GN	176	160	705,353	4,408
			Coltexo No. 3		42,873,900	
	(Duplicate gas)		Coltexo No. 1		4,591,168	(For Well
	(Well Averages Only)		Danciger		811,522	Avgs.)

[fol. 685] Coltexo Gasoline Plant No. 4

C Ama-Gray	Chapman 1	9 26	)			
D Ama-Gray	Chapman 2	9 26	dead)	80	2,462,902	31,027
C Clayton Key	B&B Key 1	B&B 1	)			
C Clayton Key	B&B Key 2	B&B 1	)	80	3,987,313	49,841
				(Col. 1)		
C Herrogan	Lester 1	1 ACH&B		20	388,210)	
				(Col. 4)		
					2,746,855	156,753
C I. T. I. O.	Chapman 1	10-26 H&GN		160	2,015,924	12,600

C Nabob	Lester 1	1 ACH&B					
C Nabob	Lester 2	1 ACH&B		80	2,450,439	30,380	
C Nabob	McLarty 1	1 ACH&B					
C Nabob	McLarty 2	1 ACH&B		80	2,699,528	33,744	
D Piney	Boatman Bank	24–24 H&GN	266	80	649,081	8,114	
D Piney	Cuddeback	18–24–H&GN	274	160	2,901,537	18,135	
D Piney	Min: Inv.	7–24–H&GN	292	160	4,784,155	29,901	
D Piney	Rippey	123–23–H&GN	312	160	211,283	1,321	
D Piney	Williams	6–24 H&GN	287	80	5,579,539	69,744	
C Plains	Chapman	10–26 H&GN		160	2,119,203	13,245	
D Shamrock	Dunaway 1	3 B&B	140	60	778,643	12,977	
C Texas Co.	Chapman 2	50 A9		160	1,989,373	12,434	
C Texas Co.	Key 1	1 B&B		240	2,791,617	11,632	
C Texas Co.	McLarty 1	2 ACH&B		80	5,838,984	72,987	
C Texas Co.	Saunders 21	B&B 2		80	1,205,985	15,075	
D Texoma	McLarty 1	B&B 2	dead	160	723,615	4,523	
D Texoma	McLarty 3	10 ACH&B	217	160	469,560	2,935	
C Texoma	Saunders 3	B&B 3		240	129,447	539	
C Texas Co.	McLarty B4	Rose Sur		160	2,042,334	12,765	
					48,557,317		
		Total Coltexo No. 4					
(Duplicate Gas)		Coltexo No. 1			388,210		

Summary

Coltexo No. 1) Coltexo No. 3) Coltexo No. 4)	7,904	156,141,010

fol. 686]

Phillips Gasoline Plants

C Adams & McGahey	Morse 1	2–26				
C Adams & McGahey	Morse 2	2–26				
C Adams & McGahey	Morse 4	2–26		160	1,168,460	7,303
C Adams & McGahey	Morse 5	2–26				
C Adams & Prince	Morse 1	3–26				
C Adams & Prince	Morse 2	3–26		80	1,000,811	12,510
C Adams & Prince	Morse 3&4	3–26				

EXHIBIT 24—Continued

Phillips Gasoline Plants—Continued

Company Name	Farm Name	Location Sec. Blk.	Present rock pressure	Acreage under lease	Total recoveries to 8/1/35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
C Alma Pet Co	Johnson 1	47-24				
C Alma Pet Co	Johnson 2	47-24				
C Alma Pet Co	Johnson 3	47-24				
C Alma Pet Co	Johnson 4	47-24		320	231,486	723
C Alma Pet Co	Johnson 5	47-24				
D Anderson & Kerr	Evans 1	51-24	114	160	1,216,873	7,604
C Barnett Griffith	(Rens) Husselby	55-25		120	1,796,996	14,975
C Barnett Griffith	(Rens) Husselby	55-25		200	1,199,353	5,997
C Bell Oil & Gas	Evans 1	51-24		160	161,492	1,009
C Bell Oil & Gas	Plummer 2	45-24		160	379,472	2,372
D J. Gordon Burch	Johnson 1	36-24	232	160	586,098	3,663
C Champlin	Williams 1	49-24				
C Champlin	Williams 2	49-24				
C Champlin	Williams 3	49-24				
C Champlin	Williams 4	49-24		80	431,021	5,3888
C Champlin	Williams 5	49-24				
D Childress	Massey 1	41-25	175	20	1,474,754	73,738
C L. S. Chism	Carpenter 2	37-25		160	68,464	428
C Christie Hickman	D Spain 1	52-24				
C Christie Hickman	D Spain 2	52-24		80	260,860	3,261
C Christie Hickman	D Spain 3	52-24				
D Club Oil Co	Farren 1	26-24	235	160	1,348,321	8,427
C Club Oil Co	Johnson 1	34-24		40	1,483,436	37,086
C Danciger	Humphries	5 ACH&B		40	877,044 (Dan)	21,926

C Danciger	Morse 1	2–26				
C Danciger	Morse 2	2–26		160	1,148,551	7,102
C Danciger	Morse 4	1–26				
C Danciger	Morse 5	1–26				
C Danciger	Morse 6	1–26		100	637,924	6,379
C Danciger	Morse 7	1–26				
D Danciger	Lester	10 ACH&B	138	160	976,600 (Dan)	6,104
C Danciger	Williams 1, 2, 3	7 ACH&B			594,615 "	See Col. 3 for well averages
D Danciger	Thut	3 H&GN	155	113	1,510,809	13,370
D Danciger	Townsite	Lefors Townsite dead			811,522(Dan)	See Col. 3 for well averages)
C Devore–Robinson	Ayers 1	41–25		160	1,595,348	9,971
C Empire	Cobbl	64–25		160	83,753	523
D Empire	Cubine 1	36–25	N. P.	160	2,756,700	17,229
D Empire	Webb 1	59–25	N. P.	160	491,157	3,070
D Empire	Webb 1B	42–25	N. P.	160	1,350,613	8,441
D Great Plains	Farren 1	34–24	254	80	995,101	12,439
D Helena	Belew 1	50–24	250	160	98,705	617
D Hendrix	Evans 1	60–25	180	160	369,291	2,308
D Irish American	Morse 1	42–25	254	80	43,605	545

[fol. 687]

EXHIBIT 24—Continued

Phillips Gasoline Plants—Continued

Company Name	Farm Name	Location Sec. Blk.	Present rock pressure	Acreage under lease	Total recoveries to 8/1/35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
C Kewanee	Adams C-1	3 26		40	9,768	244
C Kewanee	Morse 1	3 26				
C Kewanee	Morse 2	3 26				
C Kewanee	Morse 1	2 26				
C Kewanee	Morse 2	2 26				
C Kewanee	Morse 3	3 26				
C Kewanee	Morse 4	3 26				
C Kewanee	Morse 2	2 26		720	5,124,139	6,040
C Kewanee	Morse 3	2 26				
C Kewanee	Morse 6	2 26				
C Kewanee	Morse 7	2 26				
C Kewanee	Morse A1	2 26				
C Kewanee	Morse B1	17 A9				
C Kewanee	Morse B2	17 A9				
C Kewanee	Morse C1	16 A9				
C Kewanee	Morse F1	3 26				
D Magnolia	Cubine 2	36 25	137	120	5,569,809	46,415
C Magnolia	Eakins 1	56 25		160	2,261,259	14,133
D Magnolia	Gethings	14 A9	332	160	52,216	326
D Magnolia	Webb 1	42 25	218	160	1,152,729	7,205
D Martin Hamilton	Plummer 1	45 24	185	40	318,058	7,951
C Midcontinent	Carwile 1	51 24				
C Midcontinent	Carwile 2	51 24				
C Midcontinent	Carwile 4	51 24		160	1,037,676	6,485
C Midcontinent	Carwile 5	51 24				
C Midcontinent	Carwile 6	51 24				
C Midcontinent	Carwile 8	51 24				
D Mudge	Finley 1	66 17	262	160	539,136	3,370

C Nabob	Morse 1	54 25				
C Nabob	Morse A1	68 25				
C Nabob	Morse B1	68 25		560	5,535,113	8,500
C Nabob	Morse C1	67 25				
C Nabob	Morse D1	54 25				
C Nabob	Morse G1	67 25				
D Nelson	Dial 1	49 25	320	160	1,243,378	7,771
C Ohio Fuel Co.	D–Spain 1	52 24				
C Ohio Fuel Co.	D–Spain 2	52 24				
C Ohio Fuel Co.	D–Spain 3	52 24		160	51,300	321
C Ohio Fuel Co.	D–Spain 4	52 24				
C Ohio Fuel Co.	D–Spain 5	52 24				
C Ohio Fuel Co.	D–Spain 6	52 24				
C Ochiltree & Tyler	Sullivan 1	64 26		40	293,729	7,343
D Pardon–Holt	Morse A1	5 26	245			
C Pardon–Holt	Morse E1	6 26				
D Pardon–Holt	Morse 3	5 26	202	320	3,911,710	12,224
C Pardon–Holt	Morse 4 (CH)	5 26				
D Pardon–Holt	Morse 4 (BH)	5 26	239			
D Phillips	Blasdell 1	56 25	310	40	245,856	6,146
D Phillips	Cubine–Saulsbury	36–25	136			
D Phillips	Grayson 1	36–25	205	160	7,435,091	46,469
D Phillips	Grayson 2	36–25	205			
C Phillips	Lela 1					
C Phillips	Lela 2					
C Phillips	Lela 4			80	414,242	5,178
C Phillips	Lela 3					
C Phillips	Lela 5					

EXHIBIT 24—Continued

Phillips Gasoline Plants—Continued

[fol. 688]

Company Name	Farm Name	Location Sec. Blk.	Present rock pressure	Acreage under lease	Total recoveries to 8/1/35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
C Quicksand	Smith 1	69 25				
C Quicksand	Smith 2	69 25		20	198,835	99,421
C Reno	Morse 4	2 26				
C Reno	Morse 5	2 26		80	478,173	5,977
C Shell	Bush 1	48 24				
C Shell	Bush 2	48 24				
C Shell	Bush 3	48 24		80	12,137	152
C Shell	Bush 4	48 24				
C Shell	Bush 5	48 24				
C Shell	Bush 6	48 24				
C Shell	D. Spain 1	52 24				
C Shell	D. Spain 2	52 24				
C Shell	D. Spain 3	52 24		80	68,916	861
C Shell	D. Spain 4	52 24				
C Shell	D. Spain 5	52 24				
D Shinnery	Brinkley 1	35 24	264	40	753,820	18,846
C Skelly	Derrick 5	53 24				
C Skelly	Derrick 9	53 24		320	12,163	38
C Skelly	Perkins 1			160	492	3
C Skelly	Webb 2	42 25		240	750,475	3,127
C Smith-Ash	Morse 1	3 26				
C Smith-Ash	Morse "B"-1	2 26				
C Smith-Ash	Morse "B"-2	2 26				
C Smith-Ash	Morse "B"-7	2 26		240	1,466,447	6,110

C	Tedesco	Back 1	44 25		80	3,020,194	37,762
C	Texas Co	Carwile 1	51 24		160	35,581	222
D	Texon Royalty	Chapman 1A or 1	27 26	252	160	1,211,382	7,571
C	Travis	Back 1	44 26				
C	Travis	Back 3	44 25		400	2,922,438	7,306
D	Travis	Webb 1	43 25	188	80	1,100,564	13,757
D	Underwood	Roach 1	27 24	240	60	1,528,522	25,475
C	Vulcan	Carpenter 1	25 25		80	2,065,729	25,822
D	Vulcan	Kinnard	41 25	170	160	3,273,518	20,469
D	Vulcan	Massey 1	41 25	174	80	913,271	11,416
C	Warner	Webb 1	42 25				
C	Warner	Webb 2	42 25		80	44,690	559
C	Wetzel (McCauley)	Holmes 1	66 25		80	1,181,446	14,768
D	Wetzel	Morse 1	67 25	305	80	1,158,487	14,481
	Totals & Averages for Phillips Gasoline Plants				9,913	84,541,737	8,262

Shamrock–Clayton Gasoline Plant

Company Name	Farm Name	Location Sec. Blk. H&GN	Present rock pressure	Acreage under lease	Total recoveries to 8/1/35 M. Cu. Ft.	Recoveries per acre M. Cu. Ft.
D Back Estate	Fee 1	45 25	190	80	937,009	11,713
D Back Estate	Fee 2	45 25	165	80	713,990	8,925
D Back Estate	Magnolia 1	45 25	175	160	171,213	1,070
D Chism	Carpenter 1	37 25	219	160	423,913	2,649
D Marathon	Carpenter 1	37 25	195	160	2,431,174	
D McLean Oil Co.	Back 1	24 25	196	160)PHIL	209,352	
				)SHAM	6,849	1,351
D Shamrock	Back 1	44 25	170	80	860,546	10,757
D Shamrock	Carpenter 1	37 25	144	160	3,393,910	21,212
C Shamrock	Massie–Chapman 1	51 25	)			
C Shamrock	Massie–Chapman 3	51 25	)	160	692,858	4,330
C Shamrock	Chapman B–1	50 25	)			
C Shamrock	Chapman C–3	50 25	)			
C Shamrock	Clayton B–1	50 25	)	180	3,210,982	17,839
C Shamrock	Clayton C–2	50 25	)			
C Shamrock	Clayton C–3	50 25	)			
C Shamrock	Clayton C–4	50 25	)			
C Texas Co.	Chapman A–2	51 25	)	)		
C Texas Co.	Chapman A–5	51 25	)	480)	2,283,219	4,592
C Texas Co.	Chapman A–6	51 25	)	)		
C Texas Co.	Chapman A–7	50 25	)			
C Texas Co.	Chapman A–8	50 25	)	160	618,488	3,866
C Texas Co.	Chapman B-3	60 25		160	696,793	4,355
C Warner	Chapman A–2	69 25		80	368,951	4,612
Totals & Averages—Shamrock Clayton Gasoline Plant				2,260	17,019,247	7,487

[fol. 690]

EXHIBIT 27-A

Comparison of the Sweet and Sour Production

West Panhandle Field

Dec. 1935, Order

Acres in Sweet area	723,000	73.2 per cent
Acres in Sour area	270,000	26.8 per cent
Allowable from Sweet area	608,552 M. C. F.	53.8 per cent
Allowable from sour area	520,496 M. C. F.	46.2 per cent

Considering entire field as a unit

Per acre allowable Sweet gas	841 C. F.	31.3 per cent
Per acre allowable Sour gas	1,927 C. F.	68.7 per cent

Considering "Well Acres" only

Per acre allowable Sweet gas (164,166 acres) 3,700 C. F. 19.5 per cent.
Per acre allowable Sour gas (34,000 acres) 15,300 C. F. 80.5 per cent.

* * * * * * *

EXHIBIT 28.

This exhibit is a detailed schedule which, pursuant to the orders of the Railroad Commission dated December 10th and 18th, 1935, (Exhibits Nos. 20 and 21, respectively) fixes the allowable for each of the gas wells in the Panhandle field. Under these schedules Texoma Natural Gas Company's wells were allowed 136,133,000 C. F. and the Consolidated Gas Utilities Corporation's wells 7,811,000 C. F. and in fixing these specific allowables for individual wells, the Commission's engineers followed the formula prescribed in the aforesaid orders. Texoma's nominations were 150,000,000; Consolidated nominations were 19,484,000 C. F.

EXHIBIT 29.

These were orders and exhibits attached to the original Bills of Complaint. To the Bill of Complaint of the Texoma Natural Gas Company there was a statement showing acreage owned by such Company which statement gave the lease number, name of Lessor, description of the property, number of acres and description of wells on the particular lease. A like statement was attached to the Bill of Complaint of the Consolidated Gas Utilities Company. To each of said bills there was also attached an order of the

Railroad Commission entered on the 28th day of August, 1935, Oil and Gas Docket No. 108. This order divided the Panhandle Sweet Gas field into two separate zones or [fol. 691] reservoirs, and described such zones. It found that the open flow or daily potential capacity of the sweet gas wells in said zones was in excess of the daily reasonable market demand for such gas from such fields to be utilized for lawful purposes. It found that the restrictions of the production of gas from such wells would prevent both under-ground and over-ground waste and would result in greater ultimate recovery of gas from said field and would cause a more efficient drainage from said reservoirs and that such restrictions were necessary to protect and adjust the correlative rights and opportunities of the owners of the various wells in said field capable of producing sweet gas. It fixed the drainage area in the East Panhandle field at 160 acres and in the West Panhandle field at 640 acres. It determined the reasonable market demand for sweet gas from the East Panhandle field to be 94,000,000 cubic feet per day, and the reasonable market demand from the West Panhandle field to be 360,000,000 cubic feet per day. It prescribed that the allowable for individual wells in the West Panhandle field should be determined by dividing the allowable for the West Panhandle field into two equal parts and that 50% of this allowable should be distributed to each well in proportion to the relative producing ability of the individual wells and 50% of the allowable should be based on the number of acres containing each of these wells, in no case more than 640 acres being allocated to one well for the purpose of proration. This order specified that for the individual wells located in the East Panhandle field the daily allowable should be determined by dividing the allowable of the East Panhandle field into two equal parts, 50% of such allowable being distributed to each well in proportion to the relative producing ability of the individual wells and 50% of the allowable being distributed on the basis of the number of acres containing each of such wells, not more than 160 acres being allocated to any individual well. Under this order, the wells of Texoma Natural Gas Company were allowed to produce only 77,000,000 cubic feet of natural gas daily, while the daily requirements of the Texoma Natural Gas Company were, at that time, 117,632,000 cubic feet of gas daily. Substantially proportionate restrictions

were imposed upon the wells of the Consolidated Gas Utilities Corporation as the total allowable production of the wells of such Complainant, determined under said order, was substantially less than the daily market requirements of said Company. The details of said order and schedules are not given for the reason that the enforcement of such order and schedules were temporarily enjoined by the Three-Judge Court. (Texas Panhandle Gas Company v. Thompson, 12 Fed. Supp. 462.) Such order and schedules were supplanted by the Commission's order of December 10, 1935, and the order of December 18, 1935 (Exhibits Nos. 21 and 21), under which new schedules of allowables were issued. (Exhibit No. 28.) Pending final determination of this case, the Railroad Commission's orders of December 10, 1935, and December 18, 1935, were superceded by the Commission's order of January 18, 1936 (Exhibit No. 81), together with appropriate schedules issued thereunder (Exhibits No. 82 and No. 83).

* * * * * * *

EXHIBIT 30.

This was a letter dated December 11, 1935, issued by the Railroad Commission of Texas through its Deputy Supervisor, K. I. Dunn. The relevant provisions of said letter are detailed in the narrative of the testimony.

[fol. 692] EXHIBIT 31

This exhibit consisted of an order of the Railroad Commission of Texas granting the Cargray Company a permit to construct and operate a gasoline extraction plant. The relevant portions of the order are as follows:

"Petitioners desire to construct and operate a gasoline extraction plant on or near section 45, Blk. 4, I. & G. N. Ry. Co. survey, in Carson County, Texas, or process their gas for gasoline through an existing plant. They own, among other gas producing or potentially gas producing properties, seven gas wells having a potential gas producing capacity of 284,640,000 cubic feet.

Six of these wells *are* completed about 2 years ago, and have never yet been able to find a market for their production.

The rock pressure of said wells have fallen from 399 pounds per square inch to 349 pounds at the time the petition was filed, due to withdrawals of gas by others from the immediate vicinity, especially from the wells of the Texoma Natural Gas Co. and the Cities Service Gas Co., which companies produced and marketed large quantities of gas during the year 1933, through pipe lines leading from the west panhandle gas field to markets in other states, thus contributing to the decline in pressure of petitioners' wells and draining the gas reserves under petitioners' lands while petitioners were denied any market whatsoever for their gas through said lines. This substantially is the position in which petitioners find themselves at this time, except that they are the owners of other properties in said field with actual or potential gas producing capacity for which, though they have made every effort to do so, they have not been able to secure a market for their gas by application to the companies operating pipe lines and purchasing gas from said field; and they and their lessors and others similarly situated are being deprived of any opportunity to make any sort of use of their property because of the refusal of a market at the hands of the large gas producing companies, and to the fact that practically all available markets already taken. If such markets were not taken, in the nature of things, petitioners could not capitalize the necessary pipe lines and other means and facilities for marketing its gas in any new market, if one were available. In competition with the large gas purchasing companies they could not hope to prospect if they could raise the necessary capital to build lines, etc. because said purchasing companies have a virtual monopoly of the business. It is further shown, based on the pipe line requirements for the year 1932, that the panhandle field has enough gas to supply the present markets for more than 150 years.

Under the circumstances above stated, the petitioners ask this commission to grant them relief by the issuance of a permit under the provisions of Article 6008, which requires that natural gas shall be reserved by its owner in its natural stratum until it can be used for light or fuel, provided that the commission may grant permission for use for any other

purposes which under circumstances surrounding each particular case might be found by the commission after hearing to be practical and conducive to the public welfare.

This commission is primarily a conservation enforcement agency charged with the duty of protecting the natural resources of the State of Texas, and, as such, desires to uphold [fol. 693] and defend any of the statutes of the state seeking to conserve its natural resources, but when the exercise of such authority reaches a point, as it seems to us in this case it does, where the owners of gas producing properties which are being drained and an opportunity to use their gas for light or fuel may never, under the circumstances, be afforded them, the enforcement of the statutes becomes practical confiscation. The Commission may regulate, but it must not confiscate property, nor do we think it fair to deny relief where it may be granted under the discretionary power given in the provisions of article 6008 above quoted."

Said Company was granted a permit to construct and operate such plant by order of the Commission, February 20, 1933.

Defendants' Exhibits

Exhibit 44

This exhibit was a detailed statement listing all oil wells of the Panhandle field producing appreciable amounts of water with oil as of October 1, 1935, and was compiled from data obtained by the representatives of the Railroad Commission of Texas. A summary thereof is as follows:

County	No. Wells	Amt. water barrels	Avg. bbls.	Amt. oil bbls.	Avg. bbls.	Wtr. production %
Carson	88	658	7.5	1302	14.8	33.6%
Gray	170	7045	41.4	4366	25.7	61.7
Hutchinson	322	18261	567.	5297	16.5	77.5
Moore	12	3401	285.4	930	77.5	78.5
Wheeler	53	1061	20	739	13.9	58.9
Totals	645	30426	47.2	12634	19.6	70.7%

[fol. 694] The foregoing summary is supported by a schedule of wells showing location of well, depth of the top producing horizon, total depth of well, elevation, amount of water produced, amount of oil (if any) produced, and percentage of water.

Exhibit 45

This exhibit was a survey of 67 oil wells operating on special water exemptions, showing the percentage of water increase or decrease as shown from an actual five day gauge made in January of 1932, as compared with an actual five day gauge made in November of 1935. These wells were located in Carson, Gray, Hutchinson and Wheeler Counties. The percentage of water to fluid (consisting of water and oil) varied in the different wells. In some instances this percentage ran as low as 6% and in others as high as 95%. Some wells were making as little as 12 barrels of water per day, while others made as high as 2,200 barrels of water per day. A summary of this exhibit showing increases and decreases, respectively, is as follows:

County	No. Wells	Increase	Decrease	Same
Carson	5	5		
Gray	23	14	7	2
Hutchinson	37	31	6	
Wheeler	2		2	
Totals	67	50	15	2

Exhibit 46

This exhibit was a study made by the Engineering Department of the Railroad Commission of Texas of over 50 gas wells in the Panhandle field made for the purpose of securing data relative to water contamination of wells classified as gas wells by the Commission. The report made it clear that it was a natural phenomenon for condensation and a resultant accumulation of small quantities of water to appear in gas wells, and therefore, some distinction had to be made between ordinary condensate and foreign intrusion of water. The Commission's engineers adopted a twenty minute period for determination of potentials in the Panhandle field, believing that such was ample time for a properly cased well to "blow down". Such a period of time was used as a guide in conducting the tests and if at the end of such period of time the well was still making water, the Commission's Engineers concluded that the well

undoubtedly was producing intruded water and made their notations accordingly. Over fifty wells were investigated in the short time available for the survey. The wells were [fol. 695]not limited to one area but were found over the entire field and represent the various types of gas well completions. Many of the wells were old depleted oil wells which had been plugged back, some were completed properly for gas wells and others were improperly completed and had a considerable amount of open hole. Samples of the water that was being produced, along with the gas, were taken from the "live" stream of gas, using a water extractor, and such samples were sent to the University of Texas for a detailed analysis. Typical extracts from this exhibit, are as follows:

Carson County

Company	Lease	Well No.	Sec.	Blk.	Sur.	Total depth	Pay	Poten.	Rp.	Accum. withdrawal	Con.
Barnard	Barnard	1	23	4	I&GN	3128	2763–2950	9,305	267	2742793	Car.

Remarks: This well was drilled for an oil well but was plugged back to become a gas producer. A light spray came from the well as soon as it was opened and gradually increased. During the latter part of the test, the amount of water produced was reduced in quantity. A sample of the water was taken for analysis.

Champlin O&R	E. F. Bryan	4	92	4	I&GN	3232	2995–3154	5,722	216	2939971	Sk

Remarks: This well began making a light spray of water after having been open for fourteen minutes. A sample of water was taken during the last six minutes of the test. This well had been shut in for several days prior to the test.

City Service	Pope	1	242	B–2	H&GN	2675	2570–2670	17,071	352	5474525	CSG

Remarks: This well was drilled as a gas well by the City Service Gas Company and completed 10/3/28. The casing program indicates 355 ft. of open hole. A light spray began at the end of six minutes and continued all during the test. A sample was taken for analysis.

Prod. Util	McConnell	1	65	4	I&GN	2899	2455–2655	22160	246	4916098	Car.

Remarks: This well was drilled as an oil test and then plugged back for gas production. Water was being produced all during the test and a sample taken.

Gray County

British Amer	Meers	1	107	3	I&GN	3190	2604–2870	15827	262	3510150	Shell & Brit. A

Remarks: This well was not opened up but a sample of water was taken from the drip, however, an interested party in this well says that it does not make water in the form of a light spray.

[fol. 696]

City Service	Hexter	1	215	B–2	H&GN	3356	2689–2790	4314	416	1456303	CSG

Remarks: This well made water and casinghead gasoline during the entire twenty minute period. The casinghead gasoline was coming from the line leading from the well head to the meter setting. A sample was taken for analysis. This well was originally drilled as an oil well and then plugged back by Empire Oil & Refining Company to 2990 ft.

Company	Lease	Well No.	Sec.	Blk.	Sur.	Total depth	Pay	Poten.	Rp.	Accum. withdrawal	Con.
Danciger O&R	Lester	1	10	1	ACH&B	3375	2490–2620	5697	128	1218008	Dan.

Remarks: This well made a medium spray of water all during the test and a sample taken during the last eight minutes to be used for investigation. This well was drilled as an oil test but, after finding the oil pay to be barren, part of the pipe was removed and then plugged back for a gas well. This well had not been shut in prior to the test and also had been blown a few days before.

Magnolia	Latham	1	153	3	I&GN	3153	2705–2770	3498	204	624774	Mag.

Remarks: After having been opened for several minutes, this well began flowing a medium spray of water, carbon, and a paraffin sludge and continued to do so for the remainder of the test. A sample was taken during the latter part of the test for investigation. This is an oil depleted oil well and our records indicate that it has never been plugged back.

Texas	G. H. Saunders	1	3	1	ACH&B	3206	3284–3296	15106	135	1969327	Col. Fuel

Remarks: This well began making a light spray at the end of five minutes but after a few minutes the spray disappeared. At the end of 20 minutes the well was completely dry. Virtually no gas has been taken from this well during 1935, the well being idle except for some lease fuel used during October.

Back Estate	Back	2	45	25	H&GN	2390	2321–2390	3979	165	778302	Sham

Remarks: This well made a very heavy spray during the first twelve minutes, but decreased its spray during the last eight minutes and it was during this period that the sample was taken. The well had not been shut in and is now a low volume well with some oil being produced with the gas and water.

[fol. 697]

Hutchinson County

Company	Lease	Well No.	Sec.	Blk.	Sur.	Total depth	Pay	Poten.	Rp.	Accum. withdrawal	Con.
Phillips	Elva	14	...	3-E	Tomlinson			1948	190	531824	Ph.

Remarks: This is an old depleted oil well, having been plugged back, and is usually found to be productive of water when opened to the air. During this test, no water was produced. This well had not been shut in for the test and is listed as a sour well.

Phillips	Haines	2			Whitney			576	165	119254	Ph.

Remarks: This is an old depleted oil well, having been plugged back and the hole is evidently now loaded with water with insufficient gas volume to clean itself. This is a sour well.

Moore County

Company	Lease	Well No.	Sec.	Blk.	Sur.	Total depth	Pay	Poten.	Rp.	Accum. withdrawal	Con.
Canadian River	Bivine	I-1	54	47	W. T. Palmer			27591	379	2239905	CRG

Remarks: Upon opening this well, it was found to make a very light spray of water for the first few minutes but soon cleaned up and was producing dry the remainder of the period.

Magnolia	Neild	1	361	44	H&TC			4345	383	739870	Sham

Remarks: A representative of the company to which this well is connected states that this well makes water when it is open in most instances. However, during the 20 minute period that the well was open during the test, the gas stream was clean with no evidence of water. This well had been shut in for this test and is listed as a sour well.

Sunset Oil	Brumley	1	360	44	H&TC			12288	373	453273	Sham

Remarks: This well is an old depleted oil well, having produced as such for a number of days, but has been plugged back and is now producing as a gas well. This well when opened was making a heavy spray of water, but by the end of 20 minutes was practically dry. A sample was taken during the first five minutes of the test for an analysis. This well had been shut in for this test and is a sour well.

[fol. 698]

Potter County

Canadian River	Warrick, J. C.	A-1	16	Y-2	TT&RR	3108	2850-2894	50701	364	2978757	CRG

Remarks: This was originally an oil well, but has been plugged back to become a gas producer. During this test period the well produced lots of red mud and shale. Apparently, the red shale was absorbing all of the free water as it came into the well bore, thus forming the more or less mobile material.

Wheeler County

F. Dubose	Gregan	1	57	23	H&GN			81120	311	188331	LS

Remarks: This well is a very large gas well and what little water there was existed in the form of a very fine mist—probably condensation.

Lone Star	Burcham	2	89	17	H&GN			19556	284	172617	LS

Remarks: This well was found to be completely dry. We had no record of this well making water but the operator informed us that this well has made some water at times.

Lone Star	Edw. Trostle	1	130	23	H&GN	1950	1800–1950	6001	285	362002	LS

Remarks: When opened, this well made a very heavy red spray of water and gradually decreased for the remainder of the test. A sample was taken from the stream during the last six minutes of the test. This well had been shut in part of one day prior to this test.

Magnolia	A. J. Laycock	1	9	27	H&GN	2287	1950–2120	1958	160	Unavailable	Mag.

Remarks: This is an old oil well and several attempts have been made to recondition the hole and make a successful gas well of it. At the present time the hole seems to be loaded with water and there is not enough gas to move the column of fluid.

N. T. U.	Finley	1	66	17	H&GN	1904	1895–1904	14592	356	1516062	NTU

Remarks: This well was producing enough red shale to absorb all of the free water that was being produced with the gas, marking it impossible to obtain a sample from the flow of gas. It was decided to take a sample from the meter setting, hoping that this source would prove adequate.

[fol. 699] EXHIBIT 47

Exhibit Showing Effect of Two Allocations as Applied to Texoma Natural Gas Company's Holdings in the West Sweet Gas Field of the Panhandle District

Present Method—50—50—640

Allowed gas for January, 1936—605552 M. C. F. Daily.

$$\frac{\text{304,276 M. C. F. or 80\% allowed gas}}{\text{Sum well potentials}} = .03655 = \text{Potential factor.}$$

304,276 M. C. F. or

$$\frac{\text{50\% allowed gas}}{\text{Sum well acres}} = 1.8535 = \text{Acreage factor}$$

164,166 acres 8,324,321 M. C. F. Potential

50—50—2560

Allowed gas for January, 1936—608,552 M. C. F. Daily 304,276 or

$$\frac{\text{50\% allowed gas}}{\text{Sum well potentials}} = .03655 = \text{Potential factor}$$

304,276 or

$$\frac{\text{50\% allowed gas}}{\text{Sum well acres}} = .9081212 = \text{Acreage factor}$$

335,061 Acres 8,324,321 M. C. F. Potential

Texoma Total Connected Allowable 50–50—640 = 136,133–M. C. F. Daily
Texoma Total Connected allowable 50—50—2560 = 135,596–M. C. F. Daily

[fol. 700] EXHIBIT 48

Exhibit Showing Number of Towns and Cities Serviced with Natural Gas Produced in the Panhandle Gas Field of Texas

Also: The Number of Meter Connections and Numbers of Persons Using Such Gas for Light and Fuel Purposes

Company	Towns	Meter connections	Persons served
Brazos River Gas	2	80	400
Continental Oil Co	0	0	325
Canadian River Gas	38	108,172	540,860
Central States P. & L.	2	3,000	15,000
Cities Service Gas Co.	243	275,500	1,377,500
Dozier Gas Co.	1	20	100
Dixon Creek Oil and Gas Co	1	0	80
Luther Pierson	1	0	300
Lone Star Gas Co	86	143,130	718,650
North American Oil and Gas	143	308,969	1,544,845
Northern Texas Util.	20	8,882	44,410
Panhandle Eastern	73	120,000	600,000
Panhandle Power and Light	2	40	200
Producers Utilities	1	20	100
Shamrock Gas Co.	1	15	75
Southern Oklahoma Utilities	2	53	265
Texas Panhandle Gas Co.	?	?	?
Texoma Natural Gas Co.	?	?	?
West Texas Gas Company	42	.....	15,655
Wheeler Gas Company	1	48	240
Total			4,859,605

The Twenty Companies Listed Above Show Four Million Eight Hundred Fifty-Nine Six Hundred and Five Customers Served by Pipe Lines Out of the Panhandle Gas Field. However, This Does Not Include the Texas Panhandle Gas Company nor the Texoma Natural Gas Company.

[fol. 701] EXHIBIT 49

This exhibit was a bulletin issued by the Department of Interior, U. S. Bureau of Mines, Jno. W. Finch, Director, dated October 29, 1935, being Mineral Market Reports No. M. M. S. 414. Some of the salient facts presented in this bulletin are as follows:

The total output of natural gas in the United States for the year 1934 was 1,770,721,000,000 cu. ft. which represented an increase of 14% over the level of 1933. Although the distribution of natural gas for domestic purposes increased slightly in 1934, the major portion of the recovery in total distribution in 1934 was due to a material gain in demand for industrial purposes.

If it were not for the consumption of a large quantity of 2¢ gas in Texas for field purposes and in carbon black manufacture, the national average of 6¢ per thousand cu. ft. at

the well head would be materially higher. In some states producers receive more than 20¢ per thousand cu. ft. Although the average prices paid for gas by domestic and commercial consumers increased slightly in 1934, the decline in the average industrial prices was sufficient to cause the average value of the entire production at point of consumption to decline from 23.7¢ per thousand cubic feet in 1933 to 22.3¢ in 1934. Of the total domestic consumption of natural gas (net exports being deducted) amounting to 11,764,988,000,000 cu. ft., thirty-one (31%) per cent was used for field purposes, sixteen (16%) per cent was used by domestic consumers, five (5%) per cent by industrial consumers, 13% by carbon black manufacturers, seven (7%) per cent by electric public utility power plants, five (5%) per cent by petroleum refineries, two (2%) per cent by cement plants and twenty-one (21%) per cent by "other" industrial purposes.

The number of domestic and commercial consumers of natural gas in 1934 was 7,566,000.

The number of gas wells completed in 1934 was 1,373, but the total number of producing gas wells declined from 53,660 on December 31, 1933 to 53,260 on December 31, 1934.

The number of employees in a natural gas industry, as reported by the distributors, was 52,300 on December 31, 1934.

The total interstate and export movement of natural gas rose from 346,810,400,000 cu. ft. in 1933 to 414,183,000,000 cu. ft. in 1934, an increase of 19%.

Gas was transported from Texas to the states of Colorado, Illinois, Indiana, Iowa, Kansas, Louisiana, Mexico, Minnesota, Missouri, Nebraska, New Mexico, Oklahoma, South Dakota and Wyoming. To such states and countries there was transported gas produced in Texas, amounting to 139,564,000 M. cu. ft. In 1934 Texas produced 602,976 millions of cu. ft. of gas which, at the wellhead, has an average value of 2.2¢ per MCF. and at points of consumption in Texas had an average value of 15.8 per MCF. There were 7,566,000 domestic consumers and commercial consumers of gas in the United States in 1934, and these domestic and commercial consumers utilized 379,497 millions of cu. ft. of gas and paid therefor an average price of 68.6¢. The remaining consumption was by carbon black manufacturers, etc., as above stated.

[fol. 702] EXHIBIT 50.

This exhibit listed the principal natural gas pipe lines serving the Panhandle field, to-wit: Cities Service Gas Company, Panhandle Eastern Pipe Line Company, Northern Natural Gas Company, Lone Star Gas Company, Canadian River Gas Company, Consolidated Gas Utilities Company, Northern Texas Utility Company, Public Service Corporation of Texas, South Plains Pipe Line Company and Texoma Natural Gas Company. These companies constitute the principal and almost exclusive market outlet for natural gas to be used for light and fuel purposes. This exhibit gave the size of the main lines of said companies, the length of the main line in miles, daily capacity, the date upon which gas deliveries started in the respective lines, and the principal market supply of such lines. Exhibit 61 (Federal Trades Commission Report No. 72-A) shows such lines, the fields and the general territory served by them. Exhibit 48 contains similar information.

EXHIBIT 53

List of Sweet Gas Wells

Without light & fuel market Jan. 1933, showing Rock pressure of that date, loss in pounds and percentage of rock pressure and total withdrawals to Jan. 1933.

Carson County

Location	Company	Lease & Well No.	Rock Pres. Jan. 1933	Lbs. Loss on Original	% Loss	M. C. F. Production
112-5-IGN	American Ref	Burnett-4	275	155	36.6	168,947
1-4-IGN	Carson Lake Oil	Keys-1	411	19	4.4	None
101-4-IGN	Continental Oil	Burnett-B	337	93	21.6	66,476
105-5-IGN	Continental Oil	Burnett-3-C	318	112	26.0	None
121-5-IGN	Continental Oil	Burnett-1-J	380	50	11.6	None
79-4-IGN	Continental Oil	Burnett-1-L	358	72	16.7	37,326
24-4-IGN	Crebb & Jordan	Barnard-1	405	25	5.8	None
65-4-IGN	Dixon Creek	McConnell-1	360	70	16.3	10,793
7-3-ABM	El Paso Amarillo	Chapman	375	55	12.8	None
40-4-IGN	Hagy-Harrington-Mar	Magnolia-1	387	43	10.0	None
43-4-IGN	Do	Kalka-1	337	93	21.6	None
45-4-IGN	Do	McConnell-1	337	93	21.6	None
46-4-IGN	Do	McConnell-2	337	93	21.6	None
46-4-IGN	Do	McConnell-3	347	83	19.3	None
44-4-IGN	Do	Barnard-1	405	25	5.8	None
75-5-IGN	Humble O & R	Burnett-1	410	20	4.6	724,353
30-7-IGN	Interstate Prod	Moore-1	412	18	4.1	None
10-7-IGN	Do	Seiber-1	418	12	2.8	None
1-7-IGN	Prod. Util. Co.	Witter-1	420	10	2.3	256,502
24-7-IGN	Do	Foster-1	420	10	2.3	9,581
65-4-IGN	Do	McConnell-1	387	43	10.0	13,078
112-7-IGN	Reiger et al	Hodges-L	418	12	2.8	None
90-7-IGN	Do	Martin-1	431	...	....	18,458
83-4-IGN	Ryan Consolidated	Jordan-1	342	88	20.4	None
5-7-IGN	Shamrock	Dunkin-1	405	25	5.8	None

[fol. 703] 15-7-IGN.	Shamrock	Thompson-1	400	30	7.0	None
202-3-IGN	Spartan (Lyons)	Bednorz-1	400	30	7.0	None
189-3-IGN	Twin Lakes	Cobb-1	362	68	15.8	None
		Gray County				
107-3-IGN	British Amer.	Meers-1	320	110	25.6	622,076
182-b-2-HGN	Edwards	Cas-1	370	60	13.9	None
123-B-2-HGN	Herrogan	Bradford	348	82	19.0	None
154-3-IGN	Humble	Huey, Es-1	370	60	13.9	None
110-e-IGN	Humble	Peter-Young	360	70	16.2	389,628
118-B2-HGN	No. American	Bradford-1	350	80	18.6	None
107-e-IGN	Phillips-J. R. Trust	Meers-1	357	73	17.0	None
85-3-IGN	Sunray Oil	Bowers-1	335	95	22.1	357,927
120-B-2-HGN	Sunray Oil	Bowers-3	330	100	23.2	277,694
85-3-IGN	Sunray Oil	Bowers-2A	280	150	34.8	46,342
		Hutchinson County				
2-YA-TTRR	Combination O&G	Johnson-1	378	52	12.9	None
6-1-B & B	Continental Oil	Johnson-1	325	105	24.4	2,601,321
5-1-B & B	Continental Oil	Johnson-1-B	320	110	25.6	4,297
1-XO3-H&OB	Dixon Creek	Johnson-1-E	290	140	32.5	None
87-46-H&OB	Great Plains	Sanford-1	310	120	27.9	None
6-1-B & B	Liner et al	Johnson-2	330	100	23.2	None
85-46-H&TC	No. American	Sanford-1	287	143	33.3	None
2-Y2-TT&RR	Plains-Holding	Johnson-1-B	390	40	9.3	None
33-Y-A&B	Spurlock	Jamison-1	324	106	24.6	None
4-J. T. Williams	Underwood et al	Johnson-1	290	140	32.5	None
		Moore County				
25-1-Poitevent	Continental	Sneed-1	425	5	1.2	40,415
65-1-IGN	Dixon Creek	Sneed-B-3-A	290	140	32.5	None
4-G Mahon	Fritch O & G	Bivins-1	408	22	5.1	None
95-46-H&TC	Hagy, Harrington March	Bivins-1	408	22	5.1	None
93-46-H&TC	Hagy, Harrington March	Bivins-2	408	22	5.1	None
28-44-H&TC	Humble Oil	Kilgore-1	425	5	1.2	None
16-M-21-GM	Prairie O&G	Gober-3	415	15	3.5	17,877
93-46-H&TC	No. American	Bivins-1	400	30	7.0	None

[fol. 704]

EXHIBIT No. 55

Daily Average Gas Consumption by Gasoline Plants and Disposition of Residue Gas by Months

(All figures in terms of thousands of cubic feet)

Panhandle District

	Consumption	Extraction Loss	Plant & lease fuel	Carbon black	Domestic & industrial	Blown to the air
1931						
October	1,080,800	55,786	177,114	330,336	56,804	460,760
1932						
January	859,633	52,710	207,192	341,358	41,566	216,807
February	856,968	52,995	207,518	330,724	38,208	227,523
March	852,178	55,442	203,245	230,255	43,538	219,697
April	859,529	51,735	200,191	317,792	36,454	253,357
May	784,823	44,562	178,156	306,715	34,084	221,106
June	742,280	40,879	154,032	310,174	39,077	198,118
July	753,888	45,374	133,950	310,954	43,816	219,794
August	747,821	44,605	101,248	312,104	46,479	243,385
September	726,160	39,421	103,932	325,453	44,072	213,282
October	716,538	39,575	84,123	316,311	41,993	234,536
November	713,743	39,231	93,880	317,247	46,237	217,148
December	715,490	39,701	96,687	317,870	74,266	187,596
Daily Average	777,420	45,466	147,012	311,413	44,149	221,029
1933						
January	708,824	39,543	89,462	337,634	34,939	207,246
February	742,649	46,995	105,815	342,338	41,816	205,685
March	785,644	50,273	111,695	350,993	36,965	235,718
April	839,741	55,362	105,969	362,432	29,402	286,576
May	881,956	49,308	114,125	364,740	22,400	331,383
June	915,136	50,979	111,551	384,981	19,422	348,203
July	943,093	50,723	90,178	389,690	17,689	394,813
August	946,839	56,319	79,549	395,975	19,934	395,062
September	975,569	45,556	79,428	412,581	34,410	403,594
1933						
[fol. 705] October	1,104,242	52,792	89,445	413,969	45,152	502,884
November	1,145,781	55,282	106,207	430,041	50,651	503,600
December	1,156,776	55,430	105,135	443,116	50,667	502,428
Daily Average	928,854	50,713	99,046	385,707	33,620	359,766

1934						
January	1,228,794	61,047	108,519	438,616	58,875	561,737
February	1,317,139	60,843	126,709	443,483	54,300	631,714
March	1,414,977	57,608	119,822	450,760	44,035	742,752
April	1,466,035	57,121	114,785	446,887	34,329	812,913
May	1,539,365	55,823	130,539	453,190	34,618	865,195
June	1,619,105	75,891	190,891	458,104	34,304	859,935
July	1,616,828	64,792	204,474	459,858	35,869	851,835
August	1,655,336	68,627	194,064	463,391	32,448	896,806
September	1,711,847	77,564	170,348	468,621	36,386	958,928
October	1,783,469	76,273	144,234	454,494	43,787	1,064,681
November	1,773,019	76,513	127,563	452,009	55,048	1,061,886
December	1,784,427	82,158	146,420	455,219	67,008	1,033,622
Daily Average	1,577,258	67,870	148,350	453,774	44,214	863,050
1935						
January	1,798,282	84,892	162,156	450,651	68,051	1,032,532
February	1,777,880	85,731	154,927	460,011	51,120	1,026,091
March	1,813,420	97,323	151,725	474,692	43,896	1,047,784
April	1,864,938	95,819	165,685	490,347	39,764	1,073,323
May	1,843,815	90,549	150,549	504,817	37,272	1,060,830
June	1,820,527	96,284	161,173	494,023	37,045	1,031,982
July	1,847,339	94,597	158,714	515,599	37,749	1,040,690
August	995,696	57,397	119,485	484,983	35,208	299,623
September	1,321,474	70,617	115,819	514,511	45,796	573,596
October	1,461,824	88,637	145,181	524,505	46,294	657,207
Daily Average (10 months)	1,654,519	86,185	148,541	491,414	44,219	884,366

[fol. 706]

Total withdrawals by gasoline plants. 2-1-33 to 10-1-35

11 Months 1933	317,456,032
12 Months 1934	574,699,170
10 Months 1935	502,973,776
	1,395,128,978

Total Gas blown to Air by Gasoline plants. 2-1-33 to 10-1-35

1933 11 Months	125,249,298
1934 12 Months	315,013,250
1935 10 Months	268,847,264
	709,109,612

[fol. 707] EXHIBIT No. 56

This exhibit listed sweet gas wells in the West Panhandle field which were without a light and fuel market on August 1, 1935; these wells were scattered generally throughout the West Panhandle gas field. There were 75 of such wells in Carson County, four of them being shown to have no rock pressure, four of them being shown to have from 108 pounds to 200 pounds rock pressure, and the rest of the 75 wells being shown to have rock pressures ranging from above 200 pounds to 426 pounds. There were listed 36 of such unconnected wells in Gray County, of which one well was shown to have no rock pressure, and eight wells are shown to have rock pressures of above 100 pounds and below 200 pounds. The rest of the wells in Gray County were shown to have rock pressures ranging from above 200 pounds to 418 pounds. There were listed 73 of such unconnected wells in Hutchinson County, of which two wells were shown to have no rock pressure, two wells were shown to have rock pressures of 112 pounds each, and 20 wells were shown to have rock pressures ranging from 165 pounds to 200 pounds. The rest of such wells had rock pressures ranging from above 200 pounds to 353 pounds. There were listed 5 such unconnected wells in Moore County, one of which wells was shown to have no rock pressure and the rest of said wells were shown to have rock pressures ranging from 352 pounds to 425 pounds.

(Here follows 1 paster, side folio 708)

[fol. 708]

EXHIBIT 58

List of Sweet Gas Wells in West Panhandle Field

Acquired by Texoma Natural Gas Co. August 1, 1931

Showing Rock Pressure and Gas in Place at Time of Purchase, Gas Produced by Texoma Rock Pressure and Gas in Place July 1935, and Amount of Gas Drained to or from Each Lease.

Lease & Well No.		Acres in lease	Original gas in place under lease M. C. F: 20,000M per A	Rock pressure time of purchase	% of original R. P. time of purchase	M. C. F. gas in place time of purchase	Produced by Texoma	Balance remaining 8-1-1935	Rock pressure July 1935	Gas in place July 1935		Gas drained from lease since purc. M. C. F.	Gas drained to lease since purc. M. C. F.
										% of original	M. C. F.		
N. A. Cobb	1-T	160	3,200,000	367	85.3	2,730,000	1,108,030	1,621,970	269	62.6	2,003,200	.....	381,230
C. R. Garner	A-2-T	640	12,800,000	360	83.7	10,710,000	1,748,809	8,961,191	290	67.4	8,627,200	333,991	.....
C. A. Noel	1-T	160	3,200,000	406	94.4	3,020,000	573,384	2,446,616	362	84.2	2,694,400	.....	247,784
J. G. Bednorz	1-T	100	2,000,000	417	97.0	1,940,000	500,690	1,439,310	378	87.9	1,758,000	.....	318,690
J. J. Cautchfield	1-T	640	12,800,000	419	97.4	12,470,000	2,298,908	10,171,092	389	90.5	11,584,000	.....	1,412,908
D. C. Jester	1-T	160	3,200,000	425	98.8	3,161,000	417,073	2,744,527	421	97.9	3,132,800	.....	388,278
W. D. Jordan	1-T	640	12,800,000	354	82.3	10,534,400	705,200	9,829,200	279	64.9	8,307,200	1,522,000	.....
J. C. McConnell	1-E	230	4,600,000	364	84.7	3,896,200	864,279	3,031,921	249	57.9	2,663,400	368,521	.....
J. S. Bell	B-1-E	80	1,600,000	352	82.0	1,312,000	510,027	801,973	288	67.0	1,072,000	.....	270,027
J. W. Cantrell	1-E	160	3,200,000	360	84.0	2,688,000	517,460	2,170,540	281	65.3	2,089,600	80,940	.....
A. Frashier	1-E	300	6,000,000	373	86.7	5,202,000	1,130,975	4,071,025	276	64.2	3,852,000	219,025	.....
S. McCullough	1-E	208	4,160,000	370	86.0	3,577,600	563,426	3,014,174	295	68.6	2,853,760	160,414	.....
H. B. Ruscoe	1-E	80	1,600,000	350	81.3	1,300,800	459,942	840,858	285	66.3	1,060,800	.....	219,942
Mary Wall	1-E	160	3,200,000	350	81.3	2,601,600	898,447	1,703,153	250	58.1	1,859,200	.....	156,047
S. B. Burnett	1-G	640	12,800,000	328	76.3	9,966,400	1,206,823	8,559,823	283	65.8	8,422,400	137,423	.....
S. B. Burnett	11-G	640	12,800,000	330	76.7	9,817,600	186,848	9,630,752	265	61.6	7,884,800	1,745,952	.....
S. B. Burnett	19-G	640	12,800,000	325	75.6	9,676,800	593,820	9,082,980	255	59.3	7,590,400	1,492,580	.....
Burnett Estate	1-G	640	12,800,000	365	85.0	10,880,000	513,631	10,366,369	316	73.5	9,408,000	958,369	.....
Burnett Estate	B-1-G	160	3,200,000	422	98.1	3,139,200	1,814,652	1,324,541	404	94.0	3,000,000	.....	1,675,459
Burnett Estate	C-1-G	240	4,800,000	423	98.4	4,723,200	2,366,520	2,356,680	397	92.3	4,430,400	.....	2,073,720
W. E. Cobb	1-G	160	3,200,000	423	98.4	3,148,800	1,595,929	1,553,771	259	60.2	1,926,400	.....	372,629
H. M. Barrett	1-G	160	3,200,000	370	86.0	2,752,000	1,312,169	1,439,831	301	70.0	2,240,000	.....	800,169
E. B. Johnson	A-1-G	640	12,800,000	392	91.0	11,648,000	1,505,910	10,142,090	351	81.6	10,444,800	.....	302,710
J. M. Sanford	B-1-G	160	3,200,000	281	65.3	2,089,600	23,096	2,066,504	205	47.7	1,526,400	540,104	.....
C. L. Kilgore	1-G	160	3,200,000	424	98.6	3,155,200	314,740	2,840,460	419	97.4	3,116,800	.....	276,340
C. L. Kilgore	2-G	160	3,200,000	427	99.3	3,177,600	780,685	2,396,915	412	95.8	3,065,600	.....	680,731
B. Dore	1-G	640	12,800,000	422	98.1	12,556,800	731,931	11,824,869	420	97.7	12,505,600	.....	680,731
W. H. Taylor	1-P	640	12,800,000	428	99.5	12,736,000	337,367	12,398,633	423	98.4	12,595,200	.....	196,567
J. T. Sneed	1-P	640	12,800,000	408	94.9	12,147,200	674,440	11,472,760	370	86.0	11,008,000	464,760	.....
P. C. Ledrick	1-S	640	12,800,000	408	94.9	12,147,200	550,256	11,596,944	358	83.3	10,662,400	934,544	.....
C. W. Bradford	1-S	160	3,200,000	298	69.3	2,217,600	50,893	2,166,707	242	56.3	1,801,600	365,107	.....
M. C. Burnett	1-T	640	12,800,000	359	83.4	10,675,200	739,497	9,935,703	305	70.9	9,075,200	860,503	.....
M. C. Burnett	5-T	640	12,800,000	366	85.1	10,892,800	1,454,364	9,438,436	304	70.7	9,049,600	388,836	.....
												10,573,069	10,453,962

[fol. 709]

EXHIBIT 60

List of Wells of the Texas Panhandle

Showing acreage, original gas in place, gas production to July 1, 1935, Rock pressure July, 1935, gas in place July 1935, and amount of gas drained to leases.

		Acres	M. C. F. original gas in place 30,000 M per A	M. C. F. prod. by Tex. Panhandle to 7-1-1935	M. C. F. balance remaining	M. C. F. excess produced	R. P. July 1935	% of original R. P.	Gas in place July, 1935	M. C. F. gas drained to lease
Woodley	1-A	40	1,200,000	2,826,394	.....	1,626,393	267	62.1	745,000	2,371,593
Woodley	B	40	1,200,000	4,911,997	.....	3,911,997	267	62.1	745,000	4,457,197
Woodley	C	40	1,200,000	4,184,848	.....	2,984,848	270	62.8	753,600	3,738,448
Woodley	1	40	1,200,000	1,873,885	.....	673,885	268	62.3	747,600	1,421,485
Ackley	1-A	80	2,400,000	5,051,009	.....	2,651,009	270	62.8	1,500,720	4,151,729
Ackley	1-B	140	4,200,000	4,149,948	50,052	.....	269	62.6	2,629,200	2,579,148
Ackley	3	140	4,800,000	2,424,380	1,825,672	.....	272	63.3	2,658,600	832,928
Ackley	4	160	4,800,000	3,002,583	1,797,417	.....	270	62.8	3,014,400	1,216,983
Ackley	5	140	4,200,000	4,454,575	.....	254,575	269	62.6	2,629,200	2,883,775
Laycock	1	160	4,800,000	3,210,987	1,589,013	.....	268	62.3	2,990,400	1,401,387
Laycock	2	120	3,600,000	3,249,533	350,467	.....	268	62.3	2,242,800	1,892,333
Laycock	3	120	3,600,000	3,996,605	.....	396,605	268	62.3	2,242,800	2,639,405
Totals			36,600,000	43,336,744	.....	.....	...	....	22,899,720	29,586,411
	20,000M X 1397		27,940,000	.....	.....	.....	...	....	.....	.....
	30,000M X 1397		41,910,000	.....	.....	15,396,744 M	269	62.6	17,500,000	32,896,744
						1,426,744	269	62.6	26,200,000	27,626,744

[fol. 710] EXHIBIT 71

This exhibit consisted of analyses of various water samples taken from oil and gas wells in the Panhandle field producing water, as listed in Defendants' Exhibits Nos. 45 and 46. Analyses of water taken from 18 of the gas wells showed that such water was "bottom hole" water, and the analyses of water taken from 15 of the oil wells showed that such water was "bottom hole" water.

EXHIBIT 72

This exhibit was a voluminous record of resolutions passed by various organizations demanding that the Legislature of Texas take steps for conserving natural gas, preventing the waste thereof and in many instances, demanding that this law provide for ratable production of this great natural resource.

EXHIBIT 73

This exhibit was a permit issued by the State of Texas acting through the Secretary of State, authorizing the Texas Panhandle Gas Company (predecessor of Consolidated Gas Utilities Corporation) to do business in the State of Texas. This permit was dated the 23rd day of November, 1930.

EXHIBIT 74

This exhibit was a permit issued by the State of Texas acting through the Secretary of State, authorizing the Texoma Natural Gas Company to do business in the State of Texas. This permit was dated the 2nd day of June, 1930.

[fol. 711] EXHIBIT 81

Railroad Commission of Texas

Oil and Gas Division

Oil and Gas Docket No. 108

In re: Conservation and Prevention of Waste of Sweet and Sour Natural Gas in the Panhandle District of Texas

Austin, Texas, January 18, 1936.

Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas for the Month of February, 1936

The Commission, after due notice as required by the Statutes of Texas, held a public hearing on January 16th, 1936, at Austin, Texas, relating to the proration and regulation [fol. 712] for the month of February, 1936, of the production of sweet and sour natural gas in the State of Texas, in accordance with the provisions of House Bill No. 266, passed by the Forty-fourth Legislature of Texas (1935), and thereat the Commission received and heard evidence and gave all parties an opportunity to be heard.

From the evidence introduced at said hearing, together with that which was received by the Commission at previous hearings involving the Panhandle Gas Field and which was re-introduced and considered as a part of the evidence at the said hearing on January 16th, 1936, the Commission finds and determines as follows:

First. That the proration order of the Commission dated December 10, 1935, entitled "Special Order Fixing Allowable Production of Sweet and Sour Natural Gas in the Panhandle District of Texas", should be now and hereafter regarded as The Basic Order relating to the proration of sour and sweet gas in the Panhandle District.

Second. That, except as hereinafter otherwise found, the findings of fact contained and set forth in said Basic Order are approved and adopted as the findings of fact which will serve as a basis for this order for the month of February, 1936, in that the Commission finds that said findings are

supported by the evidence received and considered at the said hearing held December 16th and 17th, 1935, and January 16th, 1936, and from intensive and comprehensive study of these fields through its Engineering Staff, and from a personal study and investigation by the Commission.

Third. That the combined open-flow capacity, that is, the aggregate daily capacity to produce, of the gas wells in the East Panhandle Sweet Gas Field containing 355 gas wells is 7,012,940,000 cubic feet per day; the West Panhandle Sweet Gas Field containing 522 gas wells is 8,506,630,000 cubic feet per day; and, the Panhandle Sour Gas Field containing 243 gas wells is 2,524,617,000 cubic feet per day.

Fourth. That the reasonable market demand for sweet gas for uses permitted by House Bill No. 266, during the month of February, 1936, in the East Panhandle Sweet Gas Field is 199,045,000 cubic feet per day; and in the West Panhandle Sweet Gas Field is 625,803,000 cubic feet per day; and for sour gas in the Panhandle Sour Gas Field is 487,705,000 cubic feet per day; and said amounts respectively, are the amounts that will be produced from said zones, with the exception of the Panhandle Sour Gas Field, during said month to be utilized as permitted by said Act.

Fifth. That it is necessary to limit the production of dry sour natural gas to fifteen per cent (15%) of the total potential of the Sour Gas Area, in order to arrest the migration of dry sweet natural gas into the Sour Gas Area. That to thus limit the production of dry sour natural gas to fifteen per cent (15%) of the total potential of the sour gas area will tend to prevent waste caused by the commingling of dry sweet and sour natural gas. That the available casinghead gas is more than adequate to supply the additional gas demanded for uses to which dry sour natural gas may legally be put.

Sixth. That the Commission, in keeping with its policy, established on the basis of evidence introduced at the Statewide Hearing on September 19, 1935, of progressively lowering the maximum gas-oil ratio in the Panhandle District until the most efficient ratio is reached, finds, that it is necessary to further restrict the daily volume of gas produced from oil wells in order that uniformity of withdrawals from the reservoir may be more nearly approached.

[fol. 713] It is therefore ordered that, except as hereinafter otherwise order-s, all of the provisions, directions, rules, regulations and orders set forth and contained in the said Basic Order relating to the Panhandle Gas Field and the different zones thereof be and the same are hereby adopted and repromulgated and continued in force and effect for and during the month of February, 1936, and that same shall continue thereafter in force and effect until otherwise ordered by the Commission.

It is further ordered that the daily allowable gas production computed on the basis set forth in House Bill No. 266, in said zones, respectively, for and during the month of February, 1935, and thereafter until ordered by the Commission, shall be as follows:

East Panhandle Sweet Gas Field	199,045,000	cubic feet per day
West Panhandle Sweet Gas Field	625,803,000	cubic feet per day
Panhandle Sour Gas Field	378,693,000	cubic feet per day

and same shall be allocated and prorated among the gas wells in said zones respectively, on the basis directed and ordered in said Basic Order, and the amount of gas such well is allowed to produce daily, in accordance herewith, shall constitute its daily allowable production, but no well shall in any event be permitted to produce in excess of 25 per cent of its open-flow capacity. Schedules shall be prepared and available to all gas-well owners accordingly.

It is Further Ordered by the Railroad Commission of Texas, that effective February 1, 1936, no well producing both oil and gas shall be permitted to produce gas in excess of Eight Thousand (8,000) cubic feet per barrel of oil produced unless specially authorized by an order of the Railroad Commission to vary therefrom. The gas-oil ratio shall be the relationship of the total volume of gas in cubic feet to the total volume of oil in barrels produced from any specific well. Any well which, by reason of its location or mode of completion, is producing with a gas-oil ratio in excess of that authorized by the Railroad Commission, shall be allowed to produce daily a volume of gas equivalent to that of any other well producing from the same common source within the limits set by the Commission.

It is Further Ordered, That the reasonable lawful market demand for the East Sweet and West Sweet Panhandle Fields, shall be determined by nominations for the purchase or use of sweet natural gas submitted to the Commission in affidavit form; the form to be furnished by the Commission. However, the Commission will bi-annually, beginning January 1, 1936, reconcile the nominations with records kept by the Commission and determine the reasonableness of the demand, making the necessary rectification in the daily allowable gas production for the fields. At such times, the Commission will also make adjustments for accumulating individual well allowables and for emergencies as provided for in Section 18 of House Bill No. 266.

It is Further Ordered that this docket be kept open to consider any claims of discrimination or hardship, and to offer administrative relief, if possible, for any hardship which result by virtue of this Order, and that the Commission is anxious to hear at public hearing, in accordance with law, evidence as to any peculiarities as to any or all of the gas fields or reservoirs and/or gas wells affected by this Order.

Railroad Commission of Texas, Ernest O. Thompson, Chairman, C. V. Terrell, Commissioner, Lon A. Smith, Commissioner. (Seal.)

Attest: C. F. Petet, Secretary.

[fol. 714] EXHIBIT 82

This exhibit is the daily gas well allowable schedule for all sweet natural gas wells in the East Sweet and West Sweet gas fields in the Panhandle District of Texas, effective 7 a. m. February 1, 1936, and until further notice. Such was prepared by Railroad Commission's engineers in accordance with the order of the Railroad Commission dated January 18, 1936, and is Exhibit "B" thereof. The first page of said exhibit is as follows:

Sweet Gas Schedule

Railroad Commission of Texas, Oil and Gas Division;
Pampa, Texas

K. I. Dunn, Deputy Supervisor
W. F. McDonald, Gas Engineer

Daily Gas Well Allowables for All Sweet Natural Gas Wells in East Sweet and West Sweet Gas Fields in the Panhandle District

Effective 7 A. M., Feb. 1, 1936, and Until Further Notice

Prepared in Accordance with Railroad Commission Order Dated January 18, 1936, and is "Exhibit B" Thereof

Approved by V. E. Cottingham, Director of Production

NOTE: All Operators of Sweet Natural Gas Wells and Purchasers of Sweet Natural Gas are hereby requested to notify the Commission at the Railroad Commission office at Pampa, Texas, of any difference which may exist between their records and this schedule.

[fol. 715] The following is the second page of said exhibit:

February 1st, 1936

West Field

Key to Abbreviations:

(All figures expressed in Daily M. C. F.)

Connected to Pipe Lines:

		February nominations:		Connected allowable:
CON	Continental Oil Company	0		970
CRG	Canadian River Gas Company	128,760		134,834
CSP&L	Central States Power & Light Co.	2,950		3,951
CSG	Cities Service Gas Co.	122,052		92,740
DIX	Dixon Creek Oil & Refining Co.	.....		698
HUM	Humble Oil & Refining Company	949		2,662
GU	Gulf Production Company	515		1,445
LP	Luther Pierson Kingsmill	0		Miscl.
NA	Northern American Oil & Gas Co.	30,053		14,689
PEPL	Panhandle Eastern Pipe Line Co.	55,000		56,844
PP&L	Panhandle Power & Light Co.	517		1,376
PU	Producers Utilities Corp.	300		349
S&W	S&W Oil Company	1,900		Miscl.
TEX	The Texas Company	.....		1,778
TNG	Texoma Natural Gas Company	150,000	(E)	136,291
WTG	West Texas Gas Company	0		26,292
NP	Not prepared, etc.	.....		.....
Mscl.	Miscellaneous Lines	.....		10,692

Connected to Gasoline Plants:

C	Cargray Corporation	0		40,331
Cd	Crawford Gasoline Corporation	0		.....
Co	Coltexo Corporation	0		2,447
D	Danciger Oil & Refining Co., Inc.	5,517		419
E	Empire Gas & Fuel Company	5,890		2,364
H	F. C. Henderson Company	0		8,581
Ind.	Independent Pipe Line Company (Phillips)	0		0
M	Magnolia Petroleum Company	0		4,108
HU	J. M. Huber	53,500		2,479
Ph	Phillips Petroleum Company	46,900		42,970
Po	Portland Gasoline Corporation	6,000		11,393
Sh	Shell Petroleum Company	0		734
Sk	Skelly Oil Company	15,000		6,173
Fuel	Field-Fuel	0		4,252
None	Unconnected	0		13,941
	Total	625,803		625,803

Allowed gas for February—625,803 M. C. F. Daily
50% Allowed Gas — .03698—Potential Factor

Sum Well Potentials
50% Allowed Gas = 1.8642 = Acreage Factor

Sum Well Acres
Well acres X Acreage Factor = Acreage Allowable
Well Potential X Potential Factor = Potential Allowable
Sum of Potential and Acreage Allowable = Individual daily well allowable.

167,849 Acres 521 wells 8,462,409 M.C.F. Potential

[fol. 716] The following 16 pages list individual wells in the West Field but only the first three of same are given as typical example of the entire list.

Carson County

Company	Well No.	Lease	Acres	Poten.	Acre allow.	Poten. allow.	Well allow.	Con.
Alma	1	Eller	80	5750	19	213	232	-None
American Ref.	4	Burnett	160	1221	..	...	305	Ph.
Do	6	Do	40	3378	75	125	200	Ph.

Page 17 of said Exhibit is as follows:

February 1st, 1936

East Field

Key to Abbreviations:

(All figures expressed in daily MCF)

Connected to Pipe Lines:

		February Nominations	Connected Allowables
BRG	Brazos River Gas Company	660	306
DOZIER	Dozier Gas Company	4,065	504
LS	Lone Star Company	35,000	84,460
MOBEETIE	Mobeetie Gas Company	200	350
NTU	Northern Texas Utilities Co.	21,737	14,624
PS	Public Service Company	0	601
SG	Shamrock Gas Co.	733	1,223
SOU	Southern Oklahoma Utilities	0	757
CG	Consolidated Gas Utilities Corporation	18,000 (E)	8,301
W	Wheeler Gas Company	0	.....
NP	Not prepared for test	0	.....

Connected to Gasoline Plants:

A	Airoline Gasoline Corp.	0	1,067
AM	American Natural Gasoline Corporation	0	15,204
B	Cuckeye Gasoline Company	0	0
Co	Coltexo Corporation	9,500	6,861
D	Danciger Oil & Refineries, Inc.	0	1,055
M	Magnolia Petroleum Company	3,698	2,882
Ph	Phillips Petroleum Company	90,625	21,167
S	Shamrock Oil & Gas Company	0	3,645
Sh	Shell Petroleum Corporation	0	0
Sk	Skelly Oil Company	0	0
Sm	Smith Brothers Refining Company	7,667	10,022
Tex	The Texas Company	0	2,044
N. P.	Not prepared for test	0	0
Fuel	Field-Fuel	0	9,797
None	Unconnected	0	11,822
	Total	199,045	199,045

Allowed Gas for February = 199,045 MFC Daily
50% allowed gas = .013842 Potential Factor

Sum well potentials
50% allowed gas = 2.8000 Acreage Factor

Sum well acres

[fol. 717] Well potential X potential factor = Potential Allowable
Well acres X acreage factor = Acreage Allowable
Sum of Potential and Acreage allowable = Individual daily well allowable.

35,544 Acres 362 Wells 7,189,998 MCF Potential

Thereupon the individual wells in the East Field are listed, but only the first three are given as a typical example of the entire list which covers 14 typewritten pages:

Gray County

Company	Well No.	Lease	Acres	Poten.	Acre allow.	Poten. allow.	Well allow.	Con.
Ama-Gray	2	Chapman	80	3431	224	47	267	Co.
Back & Axelrod	1	Back	160	3242	448	45	493	S.
"	2	"	160	4946	448	68	516	S.

Exhibit 83

This is the sour gas schedule which contains the daily gas well allowables for all sour natural gas wells in the Sour Gas Field in the Panhandle District, effective 7 a. m. February 1, 1936, and until further notice. Such schedules were prepared in accordance with the Railroad Commission order dated January 18, 1936, and is Exhibit "B" thereof. It is in all respects similar to the sweet gas schedules heretofore described and only the first page of said exhibit is copied as the remainder of the exhibit merely lists the different wells and gives the well allowables for each.

Panhandle Sour Gas Schedule

February 1st, 1936

(All Figures Expressed in Daily MCF)

Key to Abbreviations:

		MCF nom.	MCF allow.
CRG	Canadian River Gas Company	50	10,683
CD	Crawford Gasoline Company	6,000	.....
G	Gulf Production Company	232	.....
H	F. C. Henderson Co.	40,000	7,515
M	Magnolia Petroleum Company	2,701	1,951
HU	Huber Corporation	47,000	22,398
Ph	Phillips Petroleum Co.	318,522	197,224
Po	Portland Gasoline Corpn.	30,000	555
S	Shamrock Oil & Gas Co.	.....	74,674
Sh	Shell Petroleum Co.	5,200	2,504
Sk	Skelly Oil Co.	38,000	32,798
Su	Sunray Oil & Gas Corpn.	.....	3,216
FF	Field Fuel	.....	575
None	Unconnected Wells	.....	21,531
Miscl	Miscellaneous companies	.....	3,069
	Totals	87,705	378,693

[fol. 718] The total sour gas nominations for the month of February, 1936 (487,705, MCF. daily) equals 19.3% of total sour gas field potentials as of January 15th, 1936. The allocation was reduced to 15% of the total sour gas field potential or 378,693 MCF. daily. This accounts for the difference in the total February nominations and the total connected allowables.

Proration Basis: 50% acreage, 50% potential, with no well allowed in excess of 25% of its open flow capacity.

Total well acres	48,552	
Total potential	2,524,617	MCF.
Total wells	240	
February Market Demand	378,693	

Acreage factor: $\frac{142231}{19379} = 7.3394$

Potential Factor: $\frac{142231}{2090448} = .06804$

EXHIBIT 84

Railroad Commission of Texas

Panhandle District

Pampa, Texas

January 28, 1936.

To All Operators:

The gas-oil ratio of each well in the Panhandle District shall be kept as low as possible and no well producing both oil and gas shall be permitted to produce gas per barrel of oil in excess of the amount of gas as fixed by order of the commission, unless specially authorized by an order of the Commission to vary therefrom.

However, any well shall be allowed to produce daily a total volume of gas equivalent to that of the well producing with the highest oil allowable within the specified gas-oil ratio from the Panhandle Field proper, so long as the ratio of gas to oil does not exceed that set by statute.

Effective February 1, 1936, and until further notice, the displacement factor shall be 613 MCF. per well per day.

K. I. Dunn, Dpty. Supervisor.

[fol. 719] Wherefore, the parties to this cause, by their respective attorneys of record, pray that the above statement of the evidence be approved and allowed by the Court as a condensed statement of the evidence (other than original Exhibits which are to be forwarded, as agreed upon by the parties) which is considered to be essential to the questions presented by the appeal and in which the testimony of witnesses has been stated in narrative form, except in a few instances in which part the testimony has been reproduced in the exact words of the witness.

(Signed) J. J. Hedrick, C. C. Mount, C. H. Keffer, D. H. Culton, S. A. L. Morgan, Attorneys of Record for Consolidated Gas Utilities Corporation and Texoma Natural Gas Company. (Signed) Wm. McCraw, Attorney General of Texas, Wm. Madden Hill, Ass't Attorney General, Attorneys of Record for Ernest O. Thompson, C. V. Terrell, Lon A. Smith and Wm. McCraw.

[fol. 720] In United States District Court

Order Approving Statement of Evidence

The foregoing statement of the evidence is agreed upon by the parties and is hereby allowed and approved, and where any part of the testimony has been reproduced in the exact words of the witness, it was so desired by the parties and the Court so directs it, finding that the testimony so reproduced in question and answer form is reasonably necessary for a full understanding of such testimony. The above statement of the evidence is hereby ordered to be filed to be included in the record on appeal as provided in paragraph (b) of Equity Rule 75.

Dated this 23rd day of May, 1936.

(Signed) J. C. Hutcheson, Jr., M., Circuit Judge; (Signed) T. M. Kennerly, M., Robert J. McMillan, District Judges.

[File endorsement omitted.]

[fol. 721] IN UNITED STATES DISTRICT COURT

No. 539. In Equity

No. 550. In Equity

[Title omitted]

STIPULATION THAT ORIGINAL EXHIBITS BE FORWARDED TO THE SUPREME COURT AND ORDER THEREON—Filed May 4, 1936

To the Honorable Judges of Said Court:

Come now the parties to said above styled and numbered causes, by their attorneys of record, and show that Exhibits numbered 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 17, 18, 22, 23, 25, 27-a, 32, 33, 34, 35, 36, 37, 38, 39, 42, 43, 59, 61, 62, 63, 64, 65, 66, 67, 68, 69, and 70, introduced in evidence in said causes, are maps, charts and diagrams which cannot be reproduced in such form as to be incorporated in the transcript, and that such maps, charts and diagrams in their original forms should be examined by the Supreme Court of the United States in order to fully understand the testimony of witnesses making reference to such maps, charts and diagrams.

(Signed) S. A. L. Morgan, Attorney for Complainants; (Signed) William McCraw, W. J. Holt, Wm. C. Davis, Wm. Madden Hill, Attorneys for Respondents.

[fol. 722] ORDER OF THE COURT

The above application having been duly presented and it appearing that it is necessary and proper that the maps, charts and diagrams designated herein, which were introduced in evidence in the trial of these causes and which cannot be reproduced and incorporated in the transcript, should be inspected by the Supreme Court of the United States upon hearing this appeal:

It is, therefore, ordered that said above described maps, charts and diagrams be certified by the Clerk of this court and be transmitted to the Clerk of the Supreme Court of

the United States at Washington, D. C., to be considered along with the transcript of the record upon the hearing of this appeal.

Dated this 4th day of May, A. D. 1936.

Signed) Jos. C. Hutcheson, Jr., Circuit Judge;
(Signed) T. M. Kennerly, District Judge;
(Signed) Robert J. McMillan, District Judge.

Approved as to form.

S. A. L. Morgan, Atty, for Complainants.

[File endorsement omitted.]

[fol. 723] In United States District Court

No. 539. In Equity

No. 550. In Equity

[Title omitted]

Stipulation as to the Contents of the Transcript of the Record—Filed May 25, 1936

It is agreed by and between the parties hereto, through their respective attorneys of record, that the transcript of record to be filed in the Supreme Court of the United States in connection with the appeal heretofore allowed herein in the above causes, consolidated for the purposes of the appeal, shall include the following:

1. Substituted bill of complaint of plaintiff, Texas Panhandle Gas Company, but omitting all exhibits thereto as they will appear, if material to issues, in the statement of the evidence.

1-a. Order Substituting Consolidated Gas Utilities Corporation as complainant.

2. Amendment to substituted bill of complaint of plaintiff, Texas, Panhandle Gas Company, filed by Consolidated Gas Utilities Corporation as substitute plaintiff, but omitting all exhibits thereto as they will appear, if material to issues, in the statement of the evidence.

[fol. 724] 3. Answer of defendants to the substituted bill of complaint of Consolidated Gas Utilities Corporation.

4. Supplemental bill of complaint of Consolidated Gas Utilities Corporation.

5. Substituted bill of complaint of Texoma Natural Gas Company, but omitting all exhibits thereto as they will appear, if material to issues, in the statement of the evidence.

6. Amendment to substituted bill of complaint of Texoma Natural Gas Company, but omitting all exhibits thereto as they will appear, if material to issues, in the statement of the evidence.

7. Answer of defendants to substituted bill of complaint of Texoma Natural Gas Company.

8. Supplemental bill of complaint of Texoma Natural Gas Company.

9. Opinion of the Court on the application for interlocutory injunctions.

10. Opinion of the Court on the applications for permanent injunctions.

11. Decrees of the Court granting permanent injunctions and consolidating the causes for the purposes of appeal.

12. Findings of fact and conclusions of law.

13. Additional findings of fact.

14. Petition for Allowance of appeal and the order allowing same.

15. Assignment of errors.

16. Bond on appeal and approval thereof.

17. Statement disclosing basis of jurisdiction of the Supreme Court under Supreme Court Rule No. 12.

18. Appellees' waiver of the matters provided for in Rule 12 of the Rules of the United States Supreme Court.

19. Waiver of citation and notice of appeal.

20. Statement of evidence.

21. Order of the Court to transmit certain original exhibits to Clerk of the Supreme Court of the United States.

22. This stipulation.

[fol. 725] 23. Certificate of Clerk, including statement that by order of the court the original exhibits provided

for in the order of the court are being transmitted along with the transcript of the record.

Dated this 21 day of May, 1936.

Consolidated Gas Utilities Corporation, Texoma Natural Gas Company, Plaintiffs-Appellees, by S. A. L. Morgan, Their Attorney of Record. Ernest O. Thompson, C. V. Terrell, Lon A. Smith, Composing the Railroad Commission of Texas; Wm. McCraw, Attorney General of Texas, Defendants-Appellants, by Wm. Madden Hill, Assistant Attorney General, Their Attorney of Record.

[File endorsement omitted.]

[fol. 726] Clerk's Certificate to foregoing transcript omitted in printing.

[fol. 727] IN SUPREME COURT OF THE UNITED STATES

STATEMENT OF POINTS TO BE RELIED UPON AND DESIGNATION OF PARTS OF THE RECORD TO BE PRINTED—Filed May 29, 1936

To the Honorable the Supreme Court of the United States:

Now comes Ernest O. Thompson, C. V. Terrell and Lon A. Smith, composing the Railroad Commission of Texas, and William McCraw, the Attorney General of Texas, appellants in the above styled cause and adopt their assignment of errors as the points to be relied upon in this appeal. [fol. 728] Appellants further state that only the following parts of the record as filed in this court are deemed necessary to be printed for the consideration of points set forth above, viz.:

1. Substituted bill of complaint of plaintiff, Texas Panhandle Gas Company, but omitting all exhibits thereto as they will appear, if material to issues, in the statement of the evidence. (Pages 1 to 51, inclusive.)

2. Order substituting Consolidated Gas Utilities Corporation as complainant. (Page 52.)

3. Amendment to substituted bill of complaint of plaintiff, Texas Panhandle Gas Company, filed by Consolidated

Gas Utilities Corporation as substitute plaintiff, but omitting all exhibits thereto as they will appear, if material to issues, in the statement of the evidence. (Pages 53 to 56, inclusive.)

[fol. 729] 4. Answer of defendants to the substituted bill of complaint of Consolidated Gas Utilities Corporation. (Pages 57 to 71, inclusive.)

5. Supplemental bill of complaint of Consolidated Gas Utilities Corporation. (Pages 72 to 77, inclusive.)

6. Substituted bill of complaint of Texoma Natural Gas Company, but omitting all exhibits thereto as they will appear, if the material to issues, in the statement of the evidence. (Pages 78 to 135, inclusive.)

7. Amendment to substituted bill of complaint of Texoma Natural Gas Company, but omitting all exhibits thereto as they will appear if material to issues, in the statement of the evidence. (Pages 136 to 139, inclusive.)

8. Answer of defendants to substituted bill of complaint of Texoma Natural Gas Company. (Pages 140 to 157, inc.)

9. Supplemental bill of complaint of Texoma Natural Gas Company. (Pages 158 to 165, inclusive.)

10. Opinions of the Court on the applications for interlocutory injunctions. (Pages 166 to 179, inclusive.)

[fol. 730] 11. Opinion of the Court on the applications for permanent injunctions. (Pages 180 to 201, inclusive.)

12. Decrees of the Court granting permanent injunctions and consolidating the causes for the purpose of appeal. (Pages 202 to 209, inclusive.)

13. Findings of fact and conclusions of law. (Pages 210 to 234, inclusive.)

14. Additional findings of fact. (Pages 235 to 239, inclusive.)

15. Petition for allowance of appeal and the order allowing same. (Pages 240 to 242A, inclusive.)

16. Assignment of errors. (Pages 243 to 255, inclusive.)

18. Waiver of citation and notice of appeal. (Page 315.)

19. Statement of evidence. (Pages 316 to 720, inclusive.)

20. Order of the Court to transmit certain original exhibits to Clerk of the Supreme Court of the United States. (Pages 721 to 722, inc.)

[fol. 731] 21. Stipulation as to contents of record. (Pages 723 to 725, inc.)

22. Certificate of the Clerk (Page 726.)
23. This instrument.

Dated this 29 day of May, 1936.

William McCraw, Attorney General of Texas; W. J. (Dick) Holt, Assistant Attorney General of Texas; Wm. Madden Hill, Assistant Attorney General of Texas; C. C. Small, Maurice Cheek, Attorneys for Appellants.

[fol. 732] ACKNOWLEDGMENT OF SERVICE OF POINTS TO BE RELIED ON IN THE SUPREME COURT OF THE UNITED STATES

Come now Consolidated Gas Utilities Corporation and Texoma Natural Gas Company, plaintiffs-appellees in the above numbered and entitled causes, same having been consolidated for the purposes of appeal, and acknowledge receipt of the statement of the points to be relied on by the appellants and designation of part of the record to be printed in the Supreme Court of the United States, and said plaintiffs-appellees hereby waive further service of proof thereof in connection with same.

Dated this 21st day of May, 1936.

S. A. L. Margan, Attorney of Record for Consolidated Gas Utilities Corporation and Texoma Natural Gas Company.

[fol. 733] [File endorsement omitted.]

File No. 40,628. W. Texas, D. C. U. S. Term No. 89. Ernest O. Thompson, C. V. Terrell, and Lon A. Smith, composing The Railroad Commission of Texas, et al., Appellants, vs. Consolidated Gas Utilities Corporation and Texoma Natural Gas Company. Filed May 28, 1936. Term No. 89; O. T. 1936.